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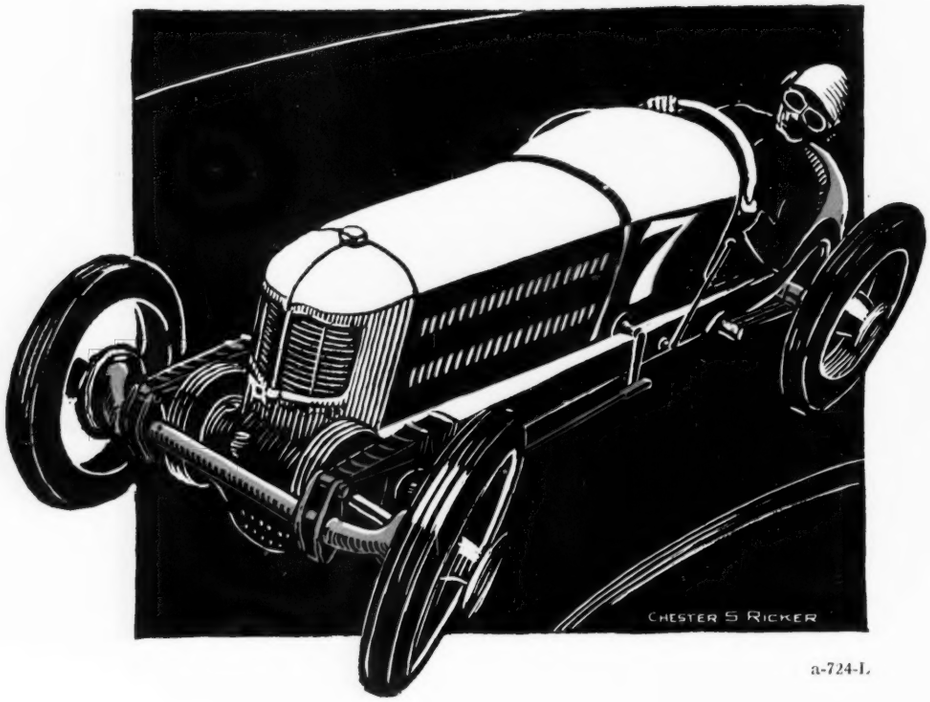

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AUTOMOTIVE EQUIPMENT DIVISION

WAUKESHA MOTOR COMPANY

Waukesha **Wisconsin**

Eastern Sales Offices *Eight W. 40th Street* *New York City*

Exclusive Builders of Heavy Duty Automotive Type Engines for Over Twenty Years

AUTOMOTIVE INDUSTRIES
VOLUME 56 *Philadelphia, Saturday, June 11, 1927* NUMBER 23

Does Automobile Advertising Need "*Toning Down*"?

Several attacks against consumer advertising in general have been launched recently and too broad claims in copy may tend to shake public confidence.

By K. W. Stillman

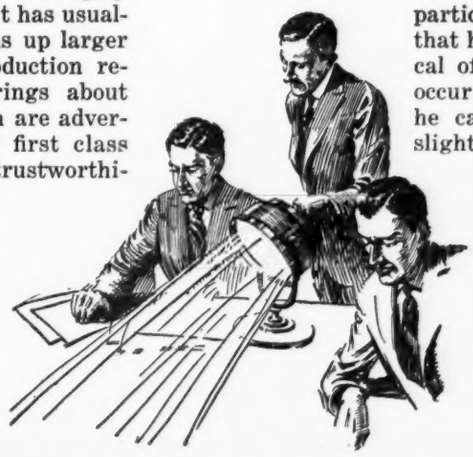
SELLING automotive products, using consumer advertising as the salesman, has in the past brought forth results much as any average salesman might be expected to produce.

Generally speaking, it has been a constructive force, a power for good; sometimes, however, it has failed to represent accurately its client's products, sometimes it has squandered his money, sometimes it has spent that money trying to sell where there wasn't any real market or by methods that were too indirect to offer a logical hope of effectiveness.

Its enduring value to many firms and many types of products is not to be discounted, nevertheless, even though the methods of its application in specific instances be called into question.

At present there appear to be signs which indicate that there may be a growing body of public opinion which will question the value of consumer advertising as it is now generally conducted and their questioning may seriously affect sales.

The public has been pretty thoroughly sold on the value of advertising. It has usually believed that advertising opens up larger markets; that the increased production resulting from wider markets brings about lower prices; that products which are advertised to consumers, must be of first class value; and that, in general, the trustworthiness, stability and all-round utility of a product and its maker is more or less indicated by the extent of its consumer advertising.



While these beliefs have been generally held in the past and are still true, in large measure, today, if we read the signs aright the future may see an increasing amount of skepticism displayed regarding all of these merchandising axioms of the past.

Symptoms which may forecast such a change in the public attitude may be found in a number of articles published within recent months for public consumption which contain scathing denunciations of what the authors believe are grave abuses of the public trust which have been brought about by the misuse of advertising.

Even though the average reader may see in this array of facts a careful compilation of the worst possible side of the picture he cannot hope to retain the same confidence in all advertising that he might have had before.

There is, for instance, the interesting book by Helen Woodward called "Through Many Windows." Mrs. Woodward had spent some twenty years in the advertising business and had been exceptionally successful, but her book indicates quite clearly that she left the field because of her aversion to the indifference of many advertisers to any sense of moral obligation to the public and because of the physical and mental arduousness of continually thinking up new schemes for misleading the public.

That Mrs. Woodward may have made particularly unfortunate connections or that her experiences may not be at all typical of the whole field of advertising may occur to the average reader but, even so, he can scarcely help but entertain some slight suspicion of advertising in general after reading such a well documented account of the abuses to which some advertising, at least, has been put.

Another exhibit is the book "Getting Your Money's Worth," by Stuart Chase and F. J. Schlink. The general trend of this book may be indicated by quotations from some suggestions made by the authors which, they believe, and with

some apparent foundation, would cause quite a disturbance if they were carried out by any considerable number of consumers. A few of these suggestions are:

Ask advertisers to produce the scientific facts upon which their claims are based.

Ask your congressman to obtain the release of government information, particularly that of the Bureau of Standards and Chemistry, on goods by makers' names.

Get competitive sales arguments together and watch them flatten out.

Refuse to deal with firms making fantastic or misleading claims or guilty of unfair competition. Write them to that effect.

Call the attention of editors to misrepresentations, either known or apparent, in advertising. You will find such, we believe, in every popular magazine.

Read labels carefully; compare them with the advertising. Discrepancies between the two measure, in part, the extent of misrepresentation.

Write for government bulletins which analyze specific products or groups of products.

Ask the nearest college to run a test for you. It will educate the students as well as yourself. Let the manufacturers know the result of the test.

Encourage the manufacturers of sound products, competently and honestly described, to keep it up. Give them your business.

Actual Examples Cited

These articles by Messrs. Chase and Schlink are supported by actual examples taken from advertising pages of various popular magazines. Everyone knows that the advertising profession contains its black sheep just as does every other business, so it has been no very difficult task for the authors to accumulate a considerable array of facts in support of their contention that consumer advertising, in general, is engaged principally in misleading the public rather than in educating it.

Still another book is "The Distribution Age," written by Ralph Borsodi and published a few months ago. Mr. Borsodi aims his attack at high pressure merchandising in general whether carried on by national advertising or by super-salesmen. His belief is that manufacturers have been chasing the will-o'-the-wisp of mass production so long that they have become almost hopelessly lost in the wilderness of mass distribution.

While admitting that to a certain extent increased production results in lower costs, he maintains that the cost of selling each additional increment of production constantly increases and that there soon arrives a time when added sales expense of merchandising the results of mass production over-balances the productive economies made possible by it. In other words, he believes that manufacturers have brought the horse back beside the cart and have forgotten that before they can reap the benefits of mass production in lower manufacturing costs they must sell the increased volume of product and in this latter activity they are likely to lose more than they can gain by factory economies.

It is this delusion, according to Mr. Borsodi, that has made "volume" the biggest word in many manufacturers' minds and has led them to introduce any sort of methods to force their products upon a diffident public at a high cost to the latter, to the manufacturer and to the country at large. Because of this, Mr. Borsodi asserts that consumer advertising has completely lost its original purpose of informing the public regarding products and is entirely devoted to argument and persuasion to the end that the public may be forced at any cost to buy the advertiser's products, whether needed or not, so that he can keep his machines operating at as near capacity as possible.

In this case, as in those cited before, the author has definitely taken a stand against the present use of consumer advertising and the intelligent reader of his book will feel certain that the blackest side has been shown. Nevertheless, Mr. Borsodi has so fortified his arguments with facts and figures that no one can help but believe that some of his statements, at least, are justified.

A final exhibit in this array of criticism is a series of articles written by Jesse Rainsford Sprague, a retired—or, as he may possibly call himself, a reformed—business man, which has appeared from time to time in recent issues of *Harper's Magazine.*

Conveying Bad Impression

These articles are very decidedly conveying the impression to readers that business in general, and Big Business in particular, is often far removed from the lily-like purity in its public relationships which one might believe to exist from reading the paeans of some of our more noted public relations counsels. In particular, most of his articles have been devoted to what might be called case illustrations, taken from his own experiences, of the inner workings of forced merchandising campaigns such as have been discussed by Mr. Borsodi. The impression the average reader gets of such methods is, we believe, no more favorable after following one of Mr. Sprague's experiences than it is after reading Mr. Borsodi's book.

Here we have four sources of criticism of modern merchandising methods which have all received rather wide distribution throughout the country. What direct influence such critics may have on the public cannot be told. If these outbursts are the opening guns for a campaign of similar material to be released in the future the cumulative effects may be important since there is little doubt that there have been and still are flagrant abuses of advertising which can readily be supplied to suspicious consumers as being typical of all advertising.

If there is any possibility of a growing public suspicion of consumer advertising, those advertisers who depend upon that medium for making contact with the public must have their skirts clear. If all advertising should be questioned by some portion of the buying public the advertisements of a manufacturer who wishes to be sure of retaining the good will he has created through years of honest endeavor must be above suspicion—even as Caesar's wife.

Emerson Wrong or Misunderstood

It should be noted that none of the critics quoted express antagonism for consumer advertising when properly conducted. It has been fairly well proved that either Emerson was wrong or that his meaning has been misunderstood. It is obviously impossible for the world to beat a path to the door of the maker of no-matter-how-excellent mouse traps unless it knows that good mouse traps are being made there. To spread this information requires advertising.

The difficulty today appears to be that while Emerson considered only one maker of "best mouse traps" there are now, according to the advertising pages of any popular magazine, makers of absolutely the best mouse traps and of every other commodity located behind every bush and tree in his wilderness.

Let us see how the automotive industry stacks up in such a picture. From recent issues of several popular magazines the following statements have been taken from the advertisements of well known makes of pas-

senger cars, each one built by a thoroughly dependable and capable organization.

Cars Selling Between $1,000 and $1,500

Makers of cars selling between $1,000 and $1,500 claim the following features for their particular product:

1. This new six puts a world of meaning in $——.
2. No other sedan provides so much quality at so low a price.
3. Today more emphatically than ever the preeminent car of its class.
4. Blank leads the world in motor car value.
5. Each model unbeatable in its class.
6. A thrill no other car can give.

Makers of a few cars selling for over $2,000 make claims as follows:

1. The one outstanding investment in motor cars.
2. Supreme combination of all that's fine in motor cars.
3. No other car can equal it on the open road.
4. Speed capabilities beyond those of any other stock car.

How is the prospective purchaser to interpret these conflicting statements? Each of the makers quoted above is probably quite sincere in making the statements. It is, indeed, a highly laudable condition that manufacturers can honestly believe that their particular products give a value to the purchaser obtainable in no other way. The difficulty with this opinion, when used as a basis for advertising, is that competitors do not agree with it but advertise a similar superiority for their products.

The quotations given indicate that there are at least six makers of cars selling in the same general competitive class, each of whom believes quite firmly that his particular car is the best one of all. To decide without delay that not all of these claims can possibly be true requires no great effort on the part of the man who reads the conflicting claims, in the advertising pages of his magazines. But how can he decide for himself which ones are true? There is no way yet known by which claims of general superiority can be proven to the satisfaction of everybody. Even if this were possible it might not solve the problem for we now have the case of several makers claiming speed superiority for their products, an apparently easy thing to substantiate.

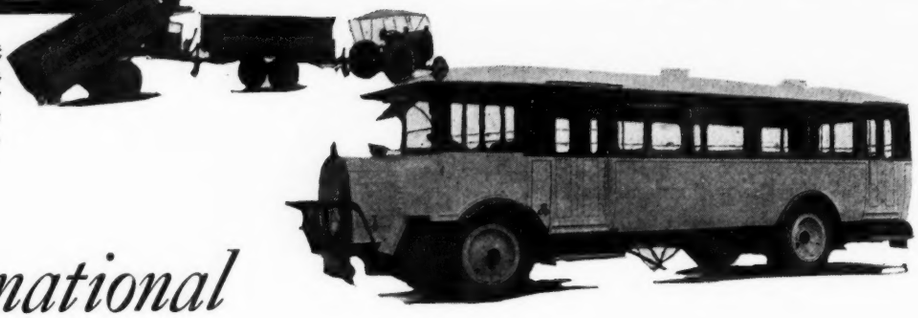
Is there a possibility that the public, under the influence of critics such as we have mentioned before, may change its present lenient regard of such statements as a sort of justifiable exuberance of a manufacturing father over the perfections of his child, and look at them simply as statements which may or may not be susceptible to proof? And if it finds many conflicting statements made by competitive manufacturers without any means of satisfying itself which of them are accurate, may not the public become skeptical about all the claims and even, possibly, extend this skepticism to cover other statements made by the advertisers which may not be in conflict?

Matter for Serious Consideration

If there is a possibility, even the smallest one, of this condition arising it seems to be a matter for serious consideration. Vast sums are being expended in consumer advertising for the purpose of building good will for the advertiser and furthering the sales of his products. If a situation should arise which might make such advertising a boomerang to return and give definite hurt to the very things the advertisement is supposed to help, a more serious condition could scarcely be imagined.

Whether such condition will ever arise we do not know. And if it should we have no panaceas to offer for it. The tendencies indicated by the recent bursts of criticism combined with the present methods of many advertisers appear to be worthy of attention by the automotive industry so that it may be in a position to continue, under possibly changed advertising environment, to lead the industrial field in merchandising as well as in manufacturing activities.

Above — The Germans in recent years have given special attention to the development of trailers for goods haulage. Illustrated here is an N. A. G. fifth wheel tractor with trailer



Below—A rubber-tired tractor of German design hauling trailers used for carrying bricks, and the N. A. G. 75–80 interurban type bus

First *International* Show in Germany Since War Devoted to *Trucks* and *Buses*

Further advance in bus body designs by German makers is noted at Cologne exposition. New six-wheel gas-electric chassis introduced. Power brakes popular.

By Edwin P. A. Heinze

THE first international motor car show in Germany to be held after the War was devoted solely to utility motor vehicles of all descriptions, including farm tractors, trucks, delivery cars, street cleaning machines, fire brigade and other municipal vehicles, and all kinds of buses.

It was held at Cologne, one of the western industrial centers of Germany, and was open from May 20 to May 31. Whether it was a success from a commercial point of view was still uncertain at the time of this writing, but it certainly drew very large crowds and was attended by delegates from numerous municipal and other corporations interested in the purchase of such vehicles as were shown.

Although the show was international, only very few non-German makers participated. The reason for this is that it is very difficult for foreigners to compete in this special market in Germany, which has a highly developed and specialized industry producing utility cars of high quality. The prices are competitive too, as German works are adopting production methods akin to those of the American industry.

The only field where there still appears to be a chance for lucrative business is that of delivery cars and light speed trucks up to 1½ tons capacity on passenger car chassis. In this case the mass production of passenger cars which is not yet so far advanced in Germany as elsewhere, helps to reduce prices and enables such makers as Ford, Chevrolet, Citroen and Renault, all of whom are represented at the show, to compete with the equivalent German makes of Opel and Brennabor.

In the other class of vehicles, the Swiss Saurer, Minerva, Renault, Lancia and Steyr displayed the models already known from the various European "Salons" of last Fall. The admirable workmanship of these makes was acknowledged all round, but for the aforementioned reasons it is very doubtful whether the exhibitors succeeded in doing sufficient business to cover costs.

Every factory of any note in Germany participated in the show, and some very fine displays were to be seen. Although most of the chassis had been shown already last autumn at the Berlin show, there were some interesting new designs by Germany's best makers. Besides these, a further advance in omnibus body designs was to be observed. Some ingenious utility bodies for street cleaning and similar purposes had great attraction for municipal men who could best judge their particular merits.

Buessing Gas-Electric

Speaking only of outstanding designs, mention should be made in the first place of a six-wheel Buessing low floor chassis with gas-electric drive, which was one of the chief attractions. This type of drive, while being no novelty in America, has hitherto not received much attention in Germany, where electric vehicles of any type have rather lost favor in recent years. They are gradually regaining their popularity, however, the impetus to the new movement prob-

ably having been given by the development of small industrial trucks of the battery type.

At the last Berlin show a new maker exhibited an electric storage battery vehicle which has since been introduced successfully in Germany, especially in Berlin, for taxicab and delivery wagon work. Simultaneously FAUN, a firm which has manufactured municipal vehicles and trucks since 1843, came out with a new gas-electric drive in a big chassis that attracted much attention. Now this development has been followed up by Buessing.

Motors Suspended From Frame

The latter's six-wheel chassis with mechanical drive was already shown at Berlin and a plan view of it was reproduced in *Automotive Industries* of Dec. 9, last year. It is identical with the present chassis with the exception of the drive. The engine has six 4.53 by 5.90 in. cylinders cast in pairs, giving a displacement volume of 571 cu. in. The head is detachable and carries the valves, which are operated by pushrods and levers. The combustion chamber is hemispherical and the compression ratio is 5.1. The crankshaft has four babbitted journal bearings and ignition is by magneto. The engine is supported on a subframe at three points and "insulated" by rubber pads. The electric motors are suspended from the frame, which is contrary to the practice of the FAUN works, who are using hub motors of a special design.

The Buessing firm claims the advantages of lower axle weight and lighter motors, as these can turn at higher speeds than hub motors. The Buessing is the first six-wheeled bus with gas-electric drive to be brought out. A double deck, 81-passenger bus of this type was shown at Cologne, and it was immediately purchased by the Berlin General Omnibus Co. The FAUN company, on the other hand, claims simplicity as an advantage of its design, which is due to the absence of driving shafts and a differential gear.

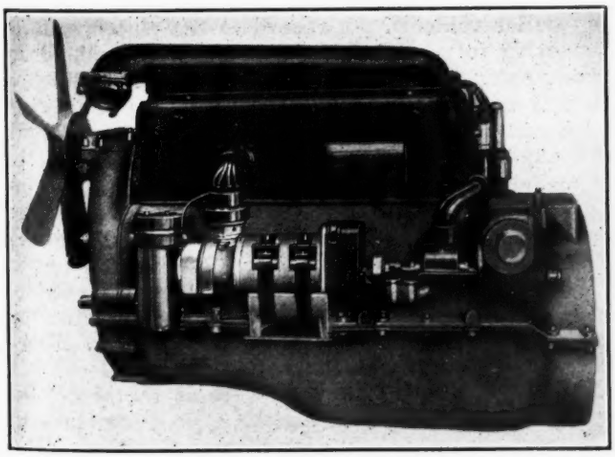
Daimler-Benz had a large array of cars at Cologne. Since the Berlin show some modifications have been made in the body work of the small buses and in one of the larger six-cylinder engines, the bore of which has been increased from 95 mm. to 100 mm. the stroke remaining at 150 mm. This engine is used chiefly in buses and while formerly the cylinders were cast in pairs they are now made in two blocks of three each. It appears that Daimler-Benz have entirely given up the valve-in-head construction in all their new engines, contrary to Buessing, who has used this feature for 20 years past.

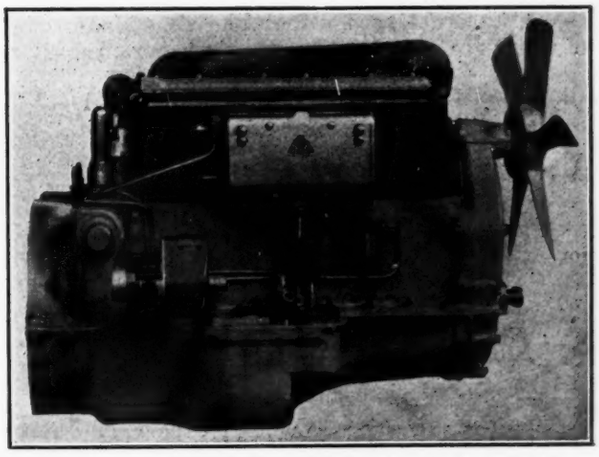
On the Daimler-Benz stand was shown a sight-seeing bus with a remarkable body, the back portion of which, containing 10 seats, was wholly inclosed, while the forward part was of the all-weather type in which the top can be pushed back. When closed the joints are made draught and rain-proof by a pneumatic device. Another vehicle on the Daimler stand was a five-ton truck with six-cylinder Diesel engine for crude oil with a bore of 4.14 in. and a stroke of 6.5 in. The engine develops 70 hp. at 1300 r.p.m.

The crankcase, the two cylinder-blocks and the valve caps are of aluminum. The cylinders are lined with interchangeable sleeves of cast iron, of which material the detachable cylinder heads are also made. These hold two valves per cylinder on the right side, the fuel jet and the ignition chamber. The valves are in the cylinder head, operated by pushrods and levers from the camshaft in the crankcase. The crankshaft runs in seven journal bearings between the upper and lower half of the crankcase. The pistons are of cast iron and have steel heads. The connecting rods are of steel and have I-section. The camshaft, together with two auxiliary shafts, is driven from a helical gear at the front end of the crankshaft. The upper one of the two auxiliary shafts operates the fuel pumps; the lower one, the water pump, the generator and—through the medium of a worm gear and vertical shaft—a fuel transport pump. The lower shaft carries, furthermore, a governor which cuts off the fuel supply as soon as the engine exceeds a fixed maximum speed. The camshaft, also through a worm gear, operates another vertical shaft, which drives the lubrication pump. A thermostat is fitted in the water circuit and keeps the water from circulating till it has reached a temperature of at least 150 deg. Fahr.

Only One Other Diesel

The only other Diesel engine in production in Germany for automotive work is that of the M.A.N. company, which builds two engines of this type—one of four, the other of six cylinders. These also are solid injection engines and are reported highly successful and reliable, doing good service in heavy trucks and also on buses. This company also exhibited a new rear axle of particularly neat design. The carrying

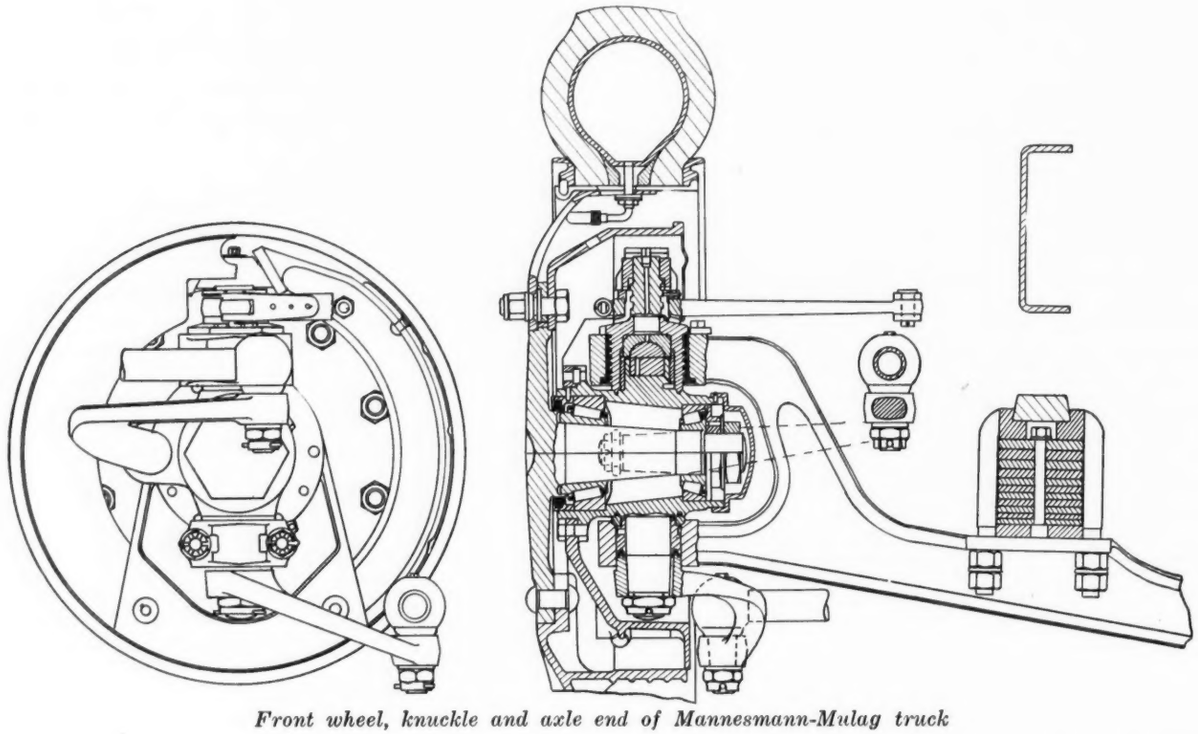




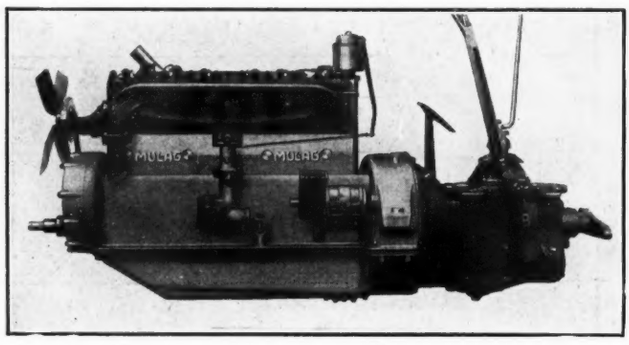
Two views (carburetor side at right) of the Maybach 427 cu. in., six-cylinder bus engine

member is a solid forging to which the differential housing and transmission are bolted, the final drive being by spur wheels at the hub. Another feature is easy adjustability of the rear brakes, it being only necessary to remove a disk on the wheels.

Many neat detail designs, as for instance, the front axle evolved by Mannesmann-Mulag, could be observed in Cologne, but it is, of course, impossible to describe the various makes at length. How thoroughly American production methods are gaining ground may be adduced from the fact that the number of works specializing in stock parts is constantly increasing. There is Maybach with a range of six-cylinder bus engines; similarly Basse & Selve; and there is the Zahnradfabrik Friedrichshafen, that supplies standard gear boxes to quite a number of German truck makers. The Mannesmann-Mulag Works, for instance, a well known truck firm with very advanced models, which has hitherto built its own engines, is now using Basse & Selve engines, though these are marked "Mulag." The Madgeburger Werkzeugmaschinen-Fabrik have designed a four and six-cylinder engine in which, except for the crankcase, crankshaft and camshafts, all parts are interchangeable, the cylinders being cast in pairs. In a similar manner the Vomag firm has standardized frames and transmission gears for its trucks and utility cars. All these facts prove that German makers are wide awake to all measures tending to cut costs, and it is somewhat surprising to find American makers of stock parts making so little effort to get into the German business.



Front wheel, knuckle and axle end of Mannesmann-Mulag truck



Six-cylinder truck engine built by Basse & Selve for the Mannesmann-Mulag truck works

Reverting to the show, the general tendencies are obviously to reduce the number of models. Compared to the last Berlin show, there has been a decrease of 12 per cent. The six-cylinder engine has become the vogue in buswork and has gained a strong foothold in the truck field. At the present time 21 German works have in production 17 models with six-cylinder engines and only 20 with four cylinders.

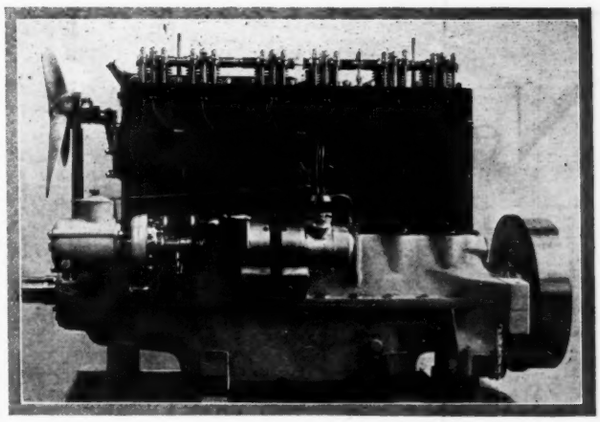
A notable development is that toward the sectional radiator, which consists of a number of standard interchangeable units called sections or "blocks," that formerly were used solely on heavy trucks and buses. At present this radiator is also being largely adopted for smaller vehicles. In regard to the clutches, it is interesting to note that the old cone type is holding its own against the multiple disk. Single disk clutches are only met with in the lighter vehicles. The gear boxes generally have four speeds and form a unit with engine and clutch. Four wheel brakes are in the ascendency at least in buswork, and they are gaining ground in the truck field too. Bosch holds the manufacturing rights to the Dewandre servo brake and has made a great hit with it, for a large number of the vehicles at the show were fitted with it. Also, the Knorr air brake is much in favor especially for heavy trucks working generally with a trailer. Electric and hydraulic brakes are also met with.

A large number of tractors were at the show, including the Fordson, Komnick, Colo, Comfraesch, Hanomag, the new Apollo and several others. The Colo is remarkable for having a three-cylinder Diesel engine. The Apollo almost looks like a small pas-

senger car of the sports type, having a windshield and doors. It has a 457 cu. in. gasoline engine running at 800 r.p.m and operating with a compression ratio of 6.5:1. Valves are carried in the detachable head. A Bosch starter is provided and a 5-speed gearbox. These tractors are receiving much attention in Germany.

Light weight traction also is occupying the German engineers and leading to the construction of some rather unusual and unconventional vehicles. There are for instance, trucks with a single cylinder engine of 30 cu. in. displacement and others with engines having two horizontally opposed, air-cooled cylinders located below the right longitudinal frame member. The small electric industrial trucks have been referred to already. They are progressing and such renowned works as the A.E.G., Siemens-Schuckert, Bleichert and Hansa-Lloyd have taken them up in their production programs.

Speaking of light weight traction, reference should be made also to a new small four-cylinder car evolved by the Phaenomen firm. It has air-cooled cylinders and looks like a small Renault at first sight. The makers have had long experience with air-cooled engines. Finally, mention should be made of a very heavy road tractor, the N.A.G. "saddle tractor." This is virtually a short truck (but without the loading platform) over the rear axle of which there is a fifth wheel to which the front end of a trailer can be fastened. The front wheels of the trailer are then swung up under the body by a special device, leaving it supported at the front by the tractor and at the rear by its own wheels. Another trailer may be coupled to the first in a similar manner, making a train of three vehicles supported on four axles and capable of easily hauling 15 tons. The tractor engine has an auxiliary driving shaft with a clutch that can be connected to a generator of large capacity, which can supply current for driving any kind of auxiliary machinery on the trailers or elsewhere, such as the air-compressors on street sprinklers.



Henschel six-cylinder valve-in-head bus engine

Reo Brings Out New 1½-Ton Speed Wagon

A NEW edition of the Reo Speed Wagon has just been issued. It is powered with a six-cylinder engine, has four-wheel brakes, automatic chassis oiling system and a comfortably upholstered, fully enclosed driver's cab. Load capacity is 1½ tons.

The six-cylinder engine is 3 3/16 by 5 in., developing 50 hp. at 2000 r.p.m. The upper crankcase is integral with the cylinder block while the lower case is of corrugated aluminum. Intake valves are chrome nickel steel; exhaust valves are silchrome steel and are offset from the cylinders. Timing gears are helical with the main drive and idler gears of fabric. Pistons are of Lynite and weigh 1.4 lb. complete with rings.

Carbon steel connecting rods and a drop-forged manganese steel crankshaft are employed, the latter being balanced statically and dynamically. Four main bearings are used. Camshafts are drop-forged steel with integral cams. Engine lubrication is force-feed to main bearings timing gears and rocker arms, and splash to cylinder walls, camshaft and connecting rod bearings. Water circulation is ensured by a centrifugal pump.

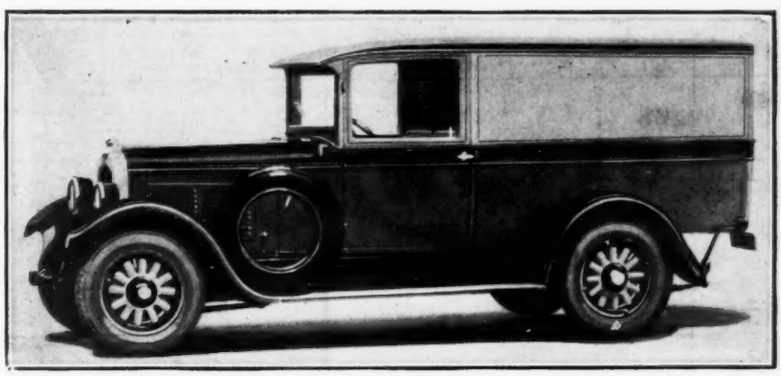
Ignition is of the jump spark type with current being supplied from generator which also supplies current to storage battery for operating lights and starter. The latter systems are of the two-unit, six-volt type. Willard battery is standard. Headlamps are TiltRay with non-glare lenses. An electric tail lamp is also provided.

The clutch is a 12-in., single dry-plate unit. Sliding selective transmission with three forward speeds and reverse is employed. The propeller shaft is of cold drawn tubular steel shafting with two enclosed universal joints between transmission and spiral bevel gears in rear axle. Standard gear reduction from engine to rear wheels ranges from 5.2 to 1 on high to 22.98 to 1 on low and 31.8 to 1 on reverse.

Mechanically operated, internal brakes are fitted to all four wheels. Rear brakes are 3 by 14½ in. while front are 2 by 14½ in. The I-beam front axle has drop-forged steering spindles with thrust bearings fitted for ease in steering. Taper roller bearings are used in the wheels.

The rear axle is of the semi-floating type with live shafts of forged and heat-treated chrome-nickel steel. Taper bearings are employed in the differential and wheels. Steering gear is of the adjustable bevel pinion and sector type with intermediate gear controlling front wheels by forged levers. Steering wheel diameter is 18 in.

Wheelbase is 133 in. Tires are 32 by 6 pneumatic. Overall chassis length is 196 5/16 in.



New Reo 1½-ton, six-cylinder, four-wheel brake Speed Wagon

New Device Uses Engine Power *to* Reduce *Steering* Effort

"Torque amplifier," developed by Bethlehem Steel Co., consists of two small drums driven in opposite directions at slow speed by universal-jointed shaft.

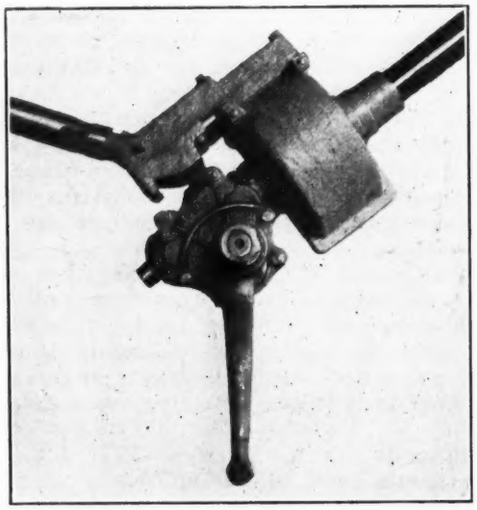
A POWER steering device has been developed by the Bethlehem Steel Company primarily for the control of heavy duty machinery, and has been reduced to proportions suitable for automobiles through cooperation between Bethlehem and Stutz engineers. It has been demonstrated recently on a Stutz sedan. The mechanism is known as a torque amplifier, a device for stepping up torque to any desired extent.

The device comprises two small drums with gear teeth on the outer circumference, which are positively driven in opposite directions at a slow speed by means of a universal-jointed shaft from the engine. Inside of each drum there is a friction-lined expanding clutch band. One end of the band is anchored to an arm extending radially from the shaft carrying the steering worm, while the other is adapted to be moved away from the former, and the clutch band thereby expanded and brought into driving contact with the drum, by a radial arm extending from the shaft carrying the steering wheel.

The two clutches are so arranged that one will be engaged by right hand and the other by left hand rotation of the steering wheel. The motion is transmitted to the worm shaft by the radial arm carrying the clutch band. A small pivoted member serves as an automatic adjustment, compensating for wear, etc., so that the friction bands are always at the proper tension, and no backlash can develop.

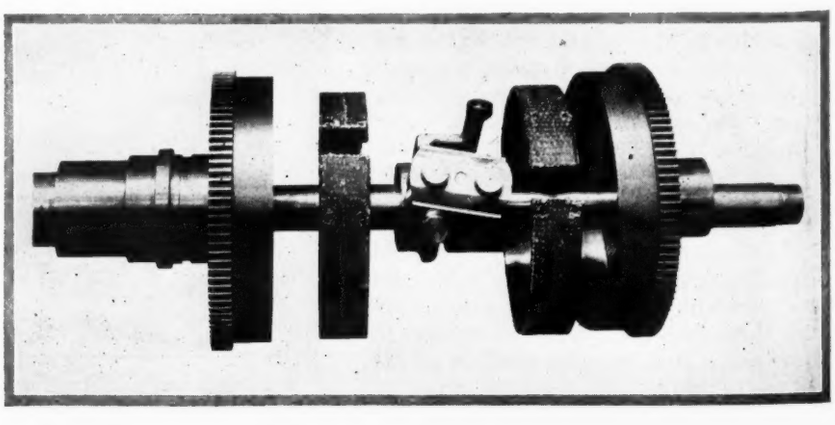
In external appearance the device is a small cylindrical casing on the steering column beneath the floor boards and immediately above the steering gear proper. From the driver's point of view the operation is in no way different from that of the ordinary car except for the extreme ease of steering. The "amplification" selected is 10 to 1, which means that with the same steering ratio as ordinarily employed the car steers with one-tenth of the usual manual effort. In parking, turning around in narrow streets, and for other maneuvering where many cuts are required with the car stationary or nearly so, the whole operation can be carried out easily with one hand and without any of the usual strenuous exertion, a point best appreciated perhaps by the woman driver. A further effect is that on rough roads the mere weight of the hand will keep the steering wheel perfectly steady. Another and unexpected result is that at high speeds the steering wheel is unusually stable and conveys a sense of complete security.

In the present installation the steering ratio, ordinarily 16 to 1, has been reduced to 6.7 to 1, in order



Assembly of torque amplifier with steering gear

At right—Parts of Nieman torque amplifier

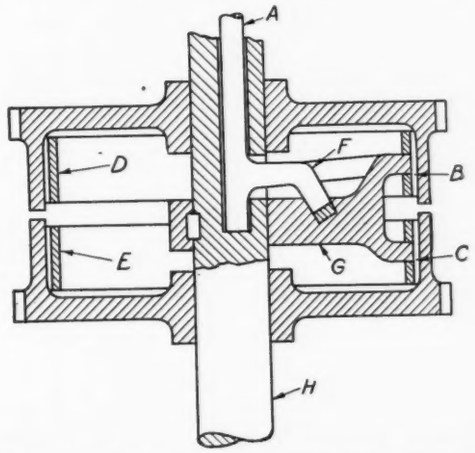


to exhibit the characteristics of the device as completely as possible. While this low ratio has the desirable feature that only a fraction of a turn is necessary to negotiate a sharp corner, eliminating the usual winding and unwinding process, it is nevertheless the general opinion that for the most convenient operation a ratio somewhere between 6.7 to 1 and the old 16 to 1 ratio should be chosen, more especially as the balloon tire has so thoroughly educated the present-day driver in turning the steering wheel through large angles. This point requires experimental investigation. It must be remembered that with the ordinary steering arrangement, ease of steering in any given design is proportional to the angle necessary at the steering wheel for a given result on the front wheels, so that the experience hitherto gained along this line is not a good basis for considering "amplified" steering where no such proportionality exists, and any steering ratio and any desired steering effort can be selected wholly on the basis of what best suits the driver.

Connection to the engine can be effected in various ways, preferably by connection to one of the external appliances already geared to the engine. The horse power required is negligible except in the case of turning when the car is at rest, but even here the maximum required is only a fraction of a horse power. If the engine should die the driver would still have unhindered control of his steering, although he no longer receives assistance from the engine. The amplifier, however, will continue to prevent road shocks from coming back to the steering wheel.

In addition to this installation on the Stutz, a torque amplifier has been applied to a heavy truck, and the remarkable phenomenon is presented of a vehicle having a load of more than 6000 lb. on the front wheels being handled as easily and surely as a light passenger car.

Torque amplifiers have been designed for various purposes. One, working on the same principle as the steering control, is now under test for the rapid and precise pointing of anti-aircraft guns. The device is the invention of Henry W. Nieman, a Bethlehem steel engineer.



Sectional sketch of Nieman power steering mechanism. A, shaft or rod to which steering hand wheel is secured; B and C, clutch drums with gear teeth; D and E, clutch bands; F, arm on shaft A by which clutches are engaged; G, radial arm by which power is transmitted from clutches to worm shaft H

Opening of New Bridge Completes Pacific Highway

THIS great new bridge, just completed in California, crosses Carquinez Straits, an arm of water more than 100 ft. deep and 2000 ft. wide, connecting Suisun and San Pablo bays, both parts of San Francisco Bay. It completes the 2000-mile-long Pacific Highway from Vancouver to Tia Juana, which is now completely paved and which can be traversed without the use of ferries at any point.

The California State Automobile Association, all dealers' organizations, and hundreds of dealers from northern and central California took part in the celebration attending the opening and it was essentially an automotive affair. The bridge is 4482 ft. long overall, with 3350 ft. of this over the water, held by two suspension spans, the main towers of which are 325 ft. above the water. Clearance above high-tide level of Carquinez Straits is 135 to 160 ft. It is the largest highway bridge in the world.

The bridge cost $8,000,000 and was built by the American Toll Bridge Co., which will operate it as a toll bridge for 25 years, when it reverts to the State of California.

French Airplane Engine Failures Analyzed to Find Causes

Most accidents in 1926 traced to mixture supply systems with ignition trouble second and crank train failures third. Greater protection is needed against fires.

IN 1925, out of 91 airplane accidents in the French Army Air Service, only 12 could be traced with certainty to the engines. In 1926, out of a total of 92 accidents, 32 were accounted for as follows: Faulty fuel supply, 23, nine of these occurring while the machines were taking off and resulting in loss of speed; faulty ignition, 2; faulty lubrication resulting in breaking of the crankshaft, 2; defective cooling system, 2; undetermined causes, 3.

These figures are taken from a paper recently read before the French Society for Aerial Navigation by Chief Engineer C. Martinot-Lagarde, who analyzed the causes of engine troubles and breakdowns in the French Army Air Service and in French commercial aviation and discussed means calculated to reduce such troubles. The following is a translation of the paper as reproduced in L'Aeronautique:

As a rule, it is much easier to trace back to their primary causes those in which no personal injury occurs and which merely prevent the completion of the flight, with possible material loss. Of such mishaps 1170 were recorded in 1926. In this connection it is well to point out that the mileage flown by French military pilots in that year was equal to many hundred times the circumference of the earth. Of these 1170 mishaps 1012 were caused by the engines and may be classified as follows:

Two hundred and fifty-eight were traceable to the mixture supply systems including 65 which were due to the carburetors; 174 to ignition, 164 to the engine crank train, 140 to the cooling system, 133 to the distribution system, 119 to the lubrication system and 24 to various causes, 13 resulting in fires.

Commmercial Breakdowns

In commercial aviation there were 308 engine breakdowns in 1925, and not more than approximately 300 in 1926, notwithstanding the fact that there was a considerable increase in air traffic. The various causes of these breakdowns were divided in about the same proportions as in the case of military flying. The breakdowns occurred for the most part with now obsolete engines, as statistics always lag behind somewhat.

The life of spark plugs is still too short, not exceeding 40 to 100 hours. If steps were taken to assure that the plugs turned out in current production were as good as the sample or original model, the factor of safety would be greatly increased. In view of the danger involved in the dropping of an electrode into the cylinder, the spark plugs should be so designed that in the case of breakage of the insulator this cannot occur, a result which can be easily achieved by providing a suitable stop.

Among the parts of the crank train, the piston is the one which gives the least trouble. Statistics show that "incidents" are at least three times as numerous with pistons having a crowned head and the piston pin fixed in the piston bosses, than with pistons having a flat head and the piston pin floating, which is no doubt due to different conditions of heating and heat expansion.

Short Pistons Safest

Short pistons with a thick head, well supported by two ribs perpendicular to its axis, with light rings, one in each groove, of which the first is protected by a substantial aluminum "land"; of slightly elliptical shape, with the small diameter in the direction of the piston pin axis, seem to be the most advantageous. Either one or two oil scraper rings should be used, with a comparatively sharp edge and with oil return holes at the bottom of the groove.

In V-type engines the connecting rods and crankshaft remain among the most fragile parts. Breakages of crankshafts are much more numerous in engines which do not have a supporting bearing on each side of each crank throw, no doubt because in that case the critical speeds are more frequently attained. Breakages of connecting rods are more frequent with the forked type of rod than with one master rod having the other rod articulated to it, owing to the difficulty of lubrication with the former and in spite of the additional stresses due to the bending moment imposed upon a master rod by the articulated rod. Lubrication of crank pins by centrifugal force gives rise to less trouble (that is to say, to fewer connecting rod breakages) than lubrication under pressure, undoubtedly because the former operates even when the crankshaft bearings have developed a little play.

Among the cooling troubles, leakage of water from the cylinder jacket accounts for 12 per cent; from the radiators, for 34 per cent, and from the piping, for 21 per cent. In the case of steel cylinders with sheet metal jackets welded on, the leaks generally occur in the walls between the cylinders. For this reason it is suggested that individual cylinders should be used, with slight corrugations in the sheet metal, to take care of the heat expansion. Leaks in the radiator are slightly more numerous in the cellular than in the tubular type, which latter is less rigid and undoubtedly less sensitive to vibration, more particu-

larly since it is generally placed farther away from the engine.

Incrustation of the radiator is particularly troublesome in hot countries. From the time of the first bench test to the last flight nothing but distilled, boiled water or rain water should ever be used in the cooling system of an aircraft engine, in order to avoid the formation of lime deposits.

Aside from mechanical troubles with the oil pumps, lubrication defects are generally due to leakage in the piping or the casings, with consequent loss in pressure; to a poor supply or to improper adjustment of the bearings.

The specific consumption of oil has been materially decreased as a result of improvement in gaskets, in the precision of machining operations, and in the form of oil grooves in the bearings, which now always terminate well inside the edges. The provision of slots or grooves parallel with the bearing edges, which serve as oil reservoirs, and of piston rings which are accurately machined and have a very small gap clearance, of the order of a few tenths of a millimeter, further cuts down the oil consumption. Experience has shown that the temperature difference between the rings and the cylinder walls is small. Experiments carried out in the United States have shown that it is advisable to make the openings through which the oil enters the crankshaft quite large, especially in the case of high-speed engines, since the crankshaft with its oil passages acts as a centrifugal pump.

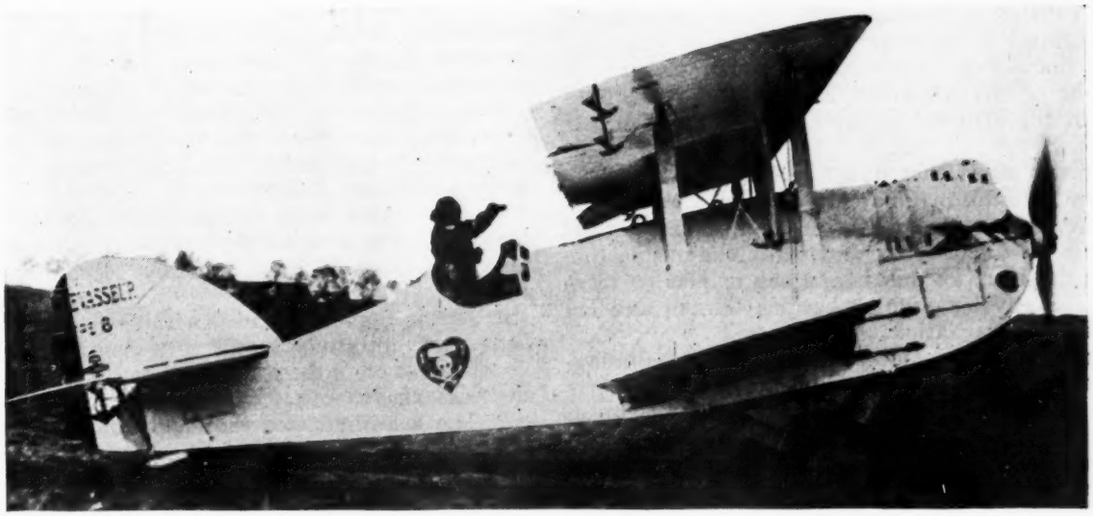
In order to be able to determine the permissible clearance limits for bearings, it would be of great interest to determine experimentally the minimum actual thickness of oil film interposed between the metal surfaces and the maximum pressures possible at high speeds. The dry sump system of lubrication should be used, and should include an appropriate adjustable oil cooler.

In view of the possibility of breakage of connecting rods and crankshafts, against which no effective safeguard has been provided, it is well to place the carburetors and the gasoline piping at some distance, as is now done on certain engines, and protect them by a sheet metal guard against flying pieces from the crankcase which might break them. But it is evidently impossible to prevent inflammation of the oil in the crankcase (which always contains some gasoline vapors) as a result of the heating of bearings or the violent deformation of parts. A carbon tetrachloride fire extinguisher is efficient in such cases.

In the case of airplanes used for stunting there is a special fire hazard in that, in the case of fuel leakage, fuel particles may be thrown onto the exhaust pipe, which is heated almost to redness by the products of combustion. The overflow pipes and pressure equalizing tubes must therefore be arranged in such a way that no fuel will be thrown out even when the plane is flying upside down.

Experiments which have been under way since last year have shown that the high tension cables to the spark plugs, whether surrounded by a metallic cable sheathing or not, give rise to an electric discharge which is visible at night; but the sparks which may

The Ill-Fated Nungesser Plane



OF all the airplane failures that have occurred in recent years, none is shrouded in deeper mystery than that of the ill-fated "White Bird" in which the intrepid French aviators, Nungesser and Coli started across the Atlantic on their way to America last month.

From the time they were sighted over the Irish coast, a few hours after taking off from Le Bourget Field, on the outskirts of Paris, nothing has been heard of them. The hope is still entertained that they reached the American continent and were forced down somewhere in the wastes of northern Canadâ, or possibly Labrador, and that they may still return eventually to civilization.

The Nungesser plane was of Levasseur design and was powered with a 450 hp. Lorraine-Dietrich water-cooled engine, with reduction gears. This is a 12-cylinder engine of the V-type, fitted with two Zenith carburetors. On leaving Le Bourget Field, the plane carried 1040 gal. of fuel. Water and accessories weighed 2415 lb. and the total weight of plane and load was 10,920 lb. The plane's wing spread was 48 ft. and the over-all length 31.7 ft.

thus be formed do not seem to be of sufficient intensity to be dangerous. Moreover, the difference of potential can be reduced by electrically connecting the metallic sheathing to adjacent metallic parts—that is to say, to the cylinder—at short intervals.

Consideration must be given also to causes of fire due to bad landings and due to "nose-overs." A classical preventative in that case, if it has been impossible to drain the tanks, consists in shutting off the ignition and then shutting off the flow of gasoline a few seconds before landing. In this way the engine is stopped from rotating even if it should be self-igniting, and the magneto is prevented from producing sparks which might pass between the ends of the broken wire or between a wire and the engine; backfires in the carburetor are prevented; the exhaust valves are allowed to cool down, as is the exhaust muffler, and all hot gas is expelled from the latter.

Statistics show that in French commercial aviation, of 27 fires which occurred in 1925, six only started while the plane was in the air and 8 as a result of a landing accident and immediately after landing. This proportion is similar for military airplanes—9 on the ground and 5 in flight in 1925, 6 on the ground and 6 in flight in 1926.

The 11 fires which occurred in flight were due—aside from three for which the cause could not be definitely determined—to the breaking or pulling apart of the gasoline pipes, to backfiring through the carburetor and to the breaking of connecting rods. The causes of 13 of the 15 fires on the ground could not be determined with certainty; all of them occurred as a result of "nose overs" or loss of speed, the engine still running; one of the fires could be traced to a backfire and another to the throwing of gasoline over the engine.

A Moving Picture Study

The Americans have studied the subject experimentally by causing a fuselage with engine running to run up against a concrete wall, taking moving pictures of the action. Commander Young, aeronautical attache of the American Embassy, kindly placed the film at the disposal of the French Society of Air Navigation.

The films showed that under the conditions of the experiment, the fire originated from the exhaust muffler. In several accidents, after a fraction of a second it was possible to clearly see a small cloud of gasoline vapor escape from an opening in the muffler or from a rent in its envelope, which became ignited and led to a general conflagration.

Prudence therefore dictates the complete elimination of an exhaust gas collector or silencer, unless special precautions are taken to sufficiently cool it on the outside and inside, which latter is always covered with a hot deposit which has a greater or lesser catalytic action. This cooling should be effected either by means of water circulation or by a system of cooling ribs. It is without doubt also advisable to provide a reasonable protection against projections of gasoline. The exhaust collector or manifold should be cooled below the minimum temperature at which gasoline vapor will ignite under the most favorable conditions, which temperature should be verified by experiment. For compressed mixtures this minimum temperature is in the neighborhood of 470 deg. Fahr.

The conditions under which the American experiments were made are certainly the most favorable to fire, representing the case where an airplane beyond the control of the pilot practically hits the ground head on, in consequence of which the passengers will most likely be killed by the shock. Unfortunately, similar conditions arise quite frequently in a case of loss of speed and taking off. Nevertheless, the case of a "nose-over" with the engine shut off or greatly slowed down is the most frequent. It would therefore be advisable to repeat the experiments made in America, with the engine slowed down and then shut off, to determine the law of temperature variation of the muffler, the influence of its dimensions, and that of the hot gases within it. In France we have had cases of "nose-over" followed by fire not only with airplanes fitted with exhaust manifolds but also on planes having merely simple exhaust nipples some centimeters in length, extending just outside the hood. The experiments which show whether these nipples are capable of causing a fire and what measures should be taken to render them safe. Of course, even if these experiments confirmed the chief responsibility of the exhaust muffler for airplane fires, that should not prevent continuation of research and the taking of all possible precautions against the fire hazards connected with carburetion and ignition.

Study of Wing Torsion

THE Air Corps has recently published a progress report on the study of torsion on wing frame work which is being made at McCook Field. Some of the conclusions which have been drawn from the work to date are:

1. It has been found that the torsional rigidity of a cantilever wing structure depends mainly upon three characteristics: the stiffness of the spars, the location of the spars along the chord and the type and design of the drag structure.

2. A method has been discovered for computing approximately the stresses in a truss-type wing frame subjected to simple torsional loads, and which has several redundant members, by the use of static equations.

3. A criterion for determining which members of a given metal truss-type wing frame are most important in regard to stiffness of the whole frame, under any loading, has been worked out.

4. Tests made with different sizes of tie rods for drag bracing proved the importance of using the proper design of drag structure in order to obtain torsional stiffness.

5. It was found that, in general the torsional deflections vary uniformly in direct proportion to the torsional couple or to the torsional moment of all the loads about an elastic axis.

6. The tests indicated that there must be an elastic axis parallel to the spars of the cantilever wing frame, about which the outer members rotate in circular arcs when the frame is subjected to torsional moments.

7. The effect of combined bending and torsion loadings upon the torsional deflections was determined by the tests and analytical study.

8. By means of Least Work computations a definite relation was found for the distribution of stresses in a cantilever wing frame acted upon by simple torsional loads.

A complete illustrated description of the various tests made, with detail results and conclusions reached, is given in Air Corps Information Circular No. 584, which has been prepared by N. R. Bailey, Material Division, Air Corps.

Just Among Ourselves

Cultivating the Habit of Reading

IN his article about "What Engineers Should Read," in last week's issue of *Automotive Industries*, J. H. Hunt suggests "Nature and the World of Man," and Mills' "Within the Atom" as good starting points for engineers who haven't done much general reading for several years, but feel the urge to get started again. Einstein's small non-mathematical book on "Relativity," he adds, has nothing within the covers beyond the capacity of any engineer. Getting started to read habitually after many years of habitual non-reading seems to be no mean undertaking if our personal observations are at all accurate. The chief trouble, it seems to us—even after the nervousness accruing from sitting still and concentrating on a single topic is overcome—arises from the more or less rigid character of thinking so often developed by the habitual non-reader. Every human being is prone to allow a fixed set of ideas, prejudices and self-made axioms grow up within him. This confused mass of prejudices gradually becomes the background of his mind. Then when he does read anything, he likes or dislikes it—that is, reacts favorably or unfavorably from an emotional standpoint—insofar as it conforms or disagrees with those prejudices.

* * *

Flexibility of Mind Difficult to Obtain

FLEXIBILITY of mind perhaps is the most difficult to obtain and the most desirable of human attributes, both from the practical standpoint of effective work and from the more general standpoint of personal mental development. To be able to listen with equanimity while your most cherished beliefs are being disproved and to feel no emotional resistance; to resist the tearing down process only insofar as you can meet with facts those facts which are tearing down your prejudices—that is nearly divine. We heard a friend the other day adversely criticizing Ludwig's "Napoleon," because it chattered the idealistic picture of that great warrior which he had had since childhood. Keeping emotions and ideas in a fluid state is an uncomfortable process for most of us; and we don't like to be uncomfortable.

* * *

Practice Tends to Make Reading a Pleasure

TO preserve that comfort many of us will go to the most ridiculous extremes at times in trying to make new, proved ideas fit in with old worn out prejudices. It is this tendency which makes reading difficult—or rather uncomfortable—after a long lapse; but the same thing is the best reason in the world for forming a habit of constant reading, until finally a few hours with fresh ideas, new theories and unfamiliar speculations becomes a pleasure rather than an irritant. To Mr. Hunt's starting list we make bold to add H. G. Well's latest and most mellow book, "The World of William Clissold."

* * *

An Interesting Feature of Chamberlin's Flight

TO us, one of the most interesting things about the 3905 mile flight of Clarence D. Chamberlin, which started last Saturday morning in New York and ended Monday in Germany, was the many hours of gruelling service that the particular plane he used had been through before the long hop across the Atlantic was begun. Ordinarily, one would expect such a long, hazardous trip to be undertaken with a machine that had been subjected to very little wear, yet the "Columbia" had to its credit 231 hours of flying service previous to the trans-Atlantic flight. During that time the actual distance covered by the plane undoubtedly would exceed 20,000 miles. Many of us who drive automobiles begin to think seriously of trading them in when the mileage register crawls up around that point.

* * *

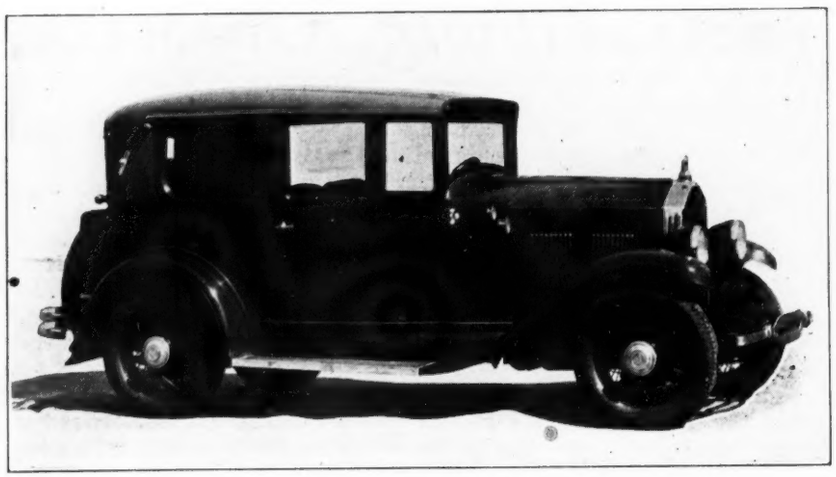
One Top Overhaul in 231 Hours

THE flight, therefore, not only further demonstrates the reliability of the modern airplane insofar as its ability to remain in the air for long periods is concerned, but it also draws attention to the remarkable strides that have been made in the direction of building long life and economy into airplane motors. In an advertisement published before the flight in question, the manufacturer of the engine in the Bellanca plane stated that the engine had been given only one top overhaul during the 231 hours of previous service.

* * *

Chief Engineers at the S. A. E. Meeting

NINE motor vehicle companies, so far as we could observe, were represented by their chief engineers at the recent summer meeting of the S. A. E. at French Lick Springs. The companies so represented included Cadillac, Stearns, Hupmobile, Auburn, Stutz, Franklin, Marmon, Pierce-Arrow, and Yellow Truck and Coach. Men high in the engineering department were present also from Studebaker, Chevrolet, Reo and several others.—N. G. S.



Four-passenger close-coupled Jordan sport salon. Wood wheels are standard, the wire wheels shown here not being included in the price of $1,595

Jordan Now in Active Production on "Custom" Model

Short wheelbase used as selling argument. Engine is six-cylinder Continental of 199 cu. in. Rear axle of worm-drive type. Hydraulic brakes.

By A. F. Denham

DURING the past two years there has been a good deal of discussion in this country of the "European" type car. Interest in the advent of such a car probably has been due largely to the need for smaller cars, to cope with crowded-traffic conditions in the larger cities, overcome difficulties in parking and increase economy of operation. That the strictly European type is not suitable for motoring conditions in the United States is now generally admitted, the American public demanding a performance that is not obtainable with the smaller foreign units.

To meet the demand for a smaller car in this country and still furnish the riding qualities and performance which the American motoring public has come to expect, the Jordan Motor Car Company developed its "Custom Jordan," which was described briefly in the Jan. 15 issue of *Automotive Industries*, coincident with the debut of this model at the New York Show. Delays in the delivery of bodies, etc., prevented the Jordan Motor Car Company from getting into active production on this model until the past month. With active production under way more details have become available.

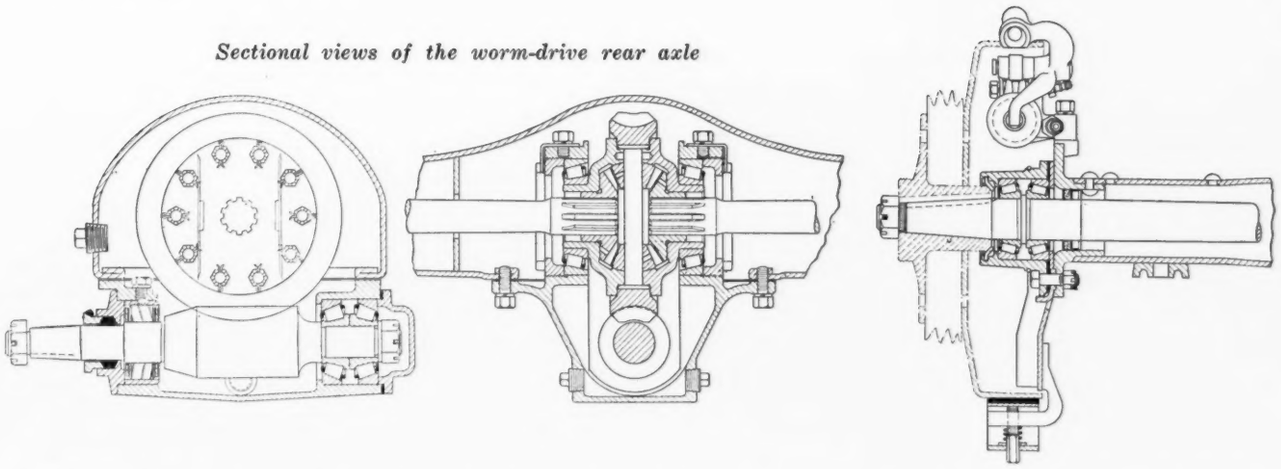
The car has a wheelbase of only 107 in. Although a long wheelbase has been a selling argument during the past few years, Mr. Jordan and his engineers began with the assumption that it was possible to build a "quality" car on a short wheelbase.

In Mr. Jordan's own words: "We are trying to make the wheelbase just as short as possible," and "we are using a six-cylinder engine because it is shorter than a straight eight." The turning radius of the car is only 17¼ ft. which facilitates parking.

The engine is built by Continental and has a bore and stroke of 3¼ and 4 in. respectively, developing approximately 60 hp. at 3000 r.p.m., with a displacement of 199 cu. in. By using a high compression ratio (5.1) the fuel economy is improved and a mileage of 18 to 20 to the gallon is claimed.

The main features of the L-head engine are as follows: Integral cast iron crankcase and cylinder block,

Sectional views of the worm-drive rear axle



with pressed steel oil pan, Nelson-type aluminum alloy pistons, seven-bearing 2⅛ in. crankshaft and 1⅞ in. crankpin journals, with spun-in connecting rod bearings; four-bearing camshaft, Link-Belt front-end drive with manual adjustment; lubrication by pressure to main, connecting rod and camshaft bearings, fan-belt-driven water pump, a six-bladed fan and three-gallon radiator; built-in air cleaner; 1¼ in. Stromberg vertical outlet carburetor; Lanchester torsional vibration damper; Purolator, Gascolator and double-cone-type rubber insulators on the rear engine supports, the front supports being rigidly attached to the frame. Electrical units are of Auto-Lite manufacture, Tiltray headlamps being standard.

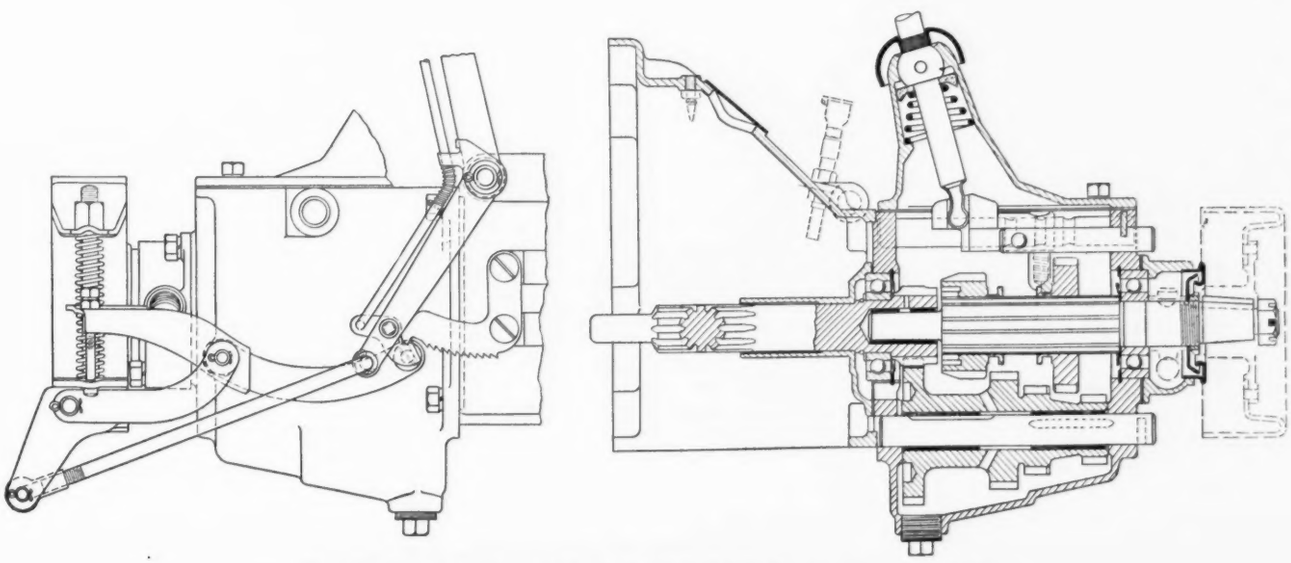
Chassis units include a Long single plate clutch; a three-speed transmission manufactured by the Warner Gear Corp. in unit with the engine; two Spicer universal joints; a 2-in. propeller shaft; a worm-drive rear axle and semi-elliptic springs. An interesting feature of the transmission relates to the mountings of the gearshift and emergency brake levers. The lower end of the gearshift lever, instead of being vertical when in the neutral position, is inclined so as to bring the point where the lever projects through the floorboard as far forward as possible. The emergency brake lever, controlling a 6-in. transmission brake with 2-in. lining, is mounted at the very front of the transmission case. This design has made it possible to increase the distance between the front seats and the levers, thus facilitating entrance to the driver's seat from the curb side.

The use of a worm-drive rear axle in this size of car also represents a rather striking departure from customary American practice. The worm is mounted below the differential case, and as a double-drop frame and 18-in. wheels with 28 by 5.25 in. balloon tires are used, the body is unusually low. Overall body height is only 69 in. yet there is ample headroom inside the car for six-footers.

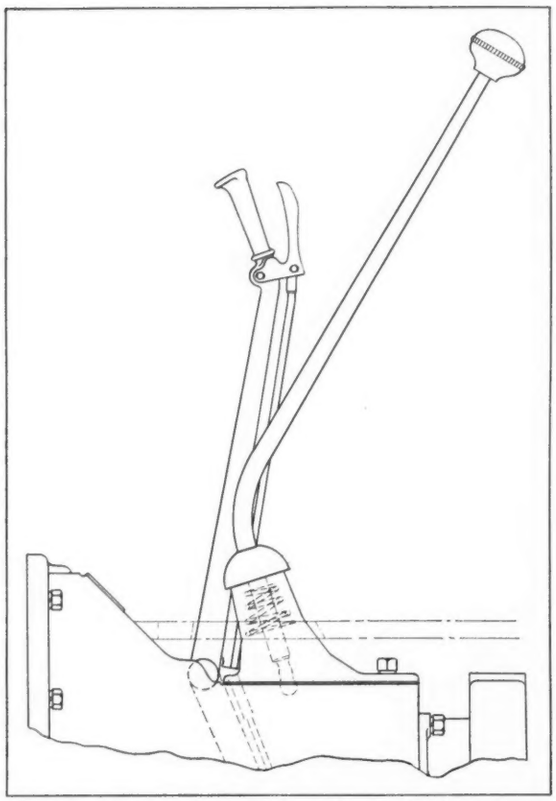
A feature of the Columbia rear axle design is the use of a large number of roller bearings. Nine are used in all, consisting of two Timken opposed taper roller bearings at each wheel, two similar bearings on the rear end of the worm shaft, with a Hyatt roller bearing at the front end, and a Timken bearing at each side of the differential housing.

Springs Unusually Long

Springs are unusually long. Chrome vanadium steel is used for both front and rear springs, which are 36 and 55¼ in. long respectively, and 2 in. wide. Rear springs are mounted outside the frame, the front spring bracket being attached directly opposite a frame cross member to reduce twisting stresses in the frame, while the rear bracket strain is also taken up by the rear tubular cross members. There are seven cross members in all, three of which are tubular and four of the gus-



Section and side elevation of three-speed-and-reverse transmission



Sketch showing how both ends of both control levers are bent backward to increase the space in the front compartment

seted pressed steel type, including the rear engine support member.

There are a number of other features in the chassis construction which are not found on cars of this size. For instance, the muffler is mounted on individual brackets from the frame side member, with clamp bands between the muffler heads instead of at the ends, while the muffler shell is built up of two metal sheets with an asbestos filling between them to reduce vibration and noise. Spring shackles are provided with an automatic spring-controlled take-up. Four-wheel, external, 12-in. Lockheed hydraulic brakes are used for service braking.

Composite Bodies

Bodies are of composite construction, with metal doors and pillars and wood framework for the rear quarter. Not only is a cowl ventilator provided, but there is also an air passage between the instrument panel and the dash, similar to that used in connection with Fisher VV windshields, in combination with a swinging type windshield. Toe boards are of cast aluminum.

Items of equipment include Fedco number plates, Nagel electric gasoline gage, Sterling electric clock, Moto Meter on the radiator, arm rests in the closed car rear quarters, adjustable foot rests, Houdaille shock absorbers all around, Hershey coincidental steering gear lock with separate switch for locking the ignition without locking the gear, combination stop and tail-light, indirect lighting of the instrument panel with a separate switch for the instrument light, Sparton French chime horn, with motor driven air compressor, and double filament bulbs.

Books for the Business Bookshelf

Endurance of Metals

Manual of Endurance of Metals Under Repeated Stress. H. F. Moore. Engineering Foundation, New York. 63 pp.

THIS book has been prepared in answer to a demand for a single source of data on fatigue failures of metals. Many investigations of this subject have been, and are being, made by various agencies but their findings if published have been so scattered that it has been rather difficult for an engineer to keep abreast with all developments. The book is simply an attempt to correlate the present knowledge of the subject in one place and as such should prove of considerable value to designing, inspection and testing engineers.

The Art of Car Painting

Motor Car and Coach Painting. Charles E. Olliver. W. R. Howell & Co., London. 264 pp. Illus. Second Edition.

THIS is a very complete, detailed account of what to do, how to do it and what materials to use for the automobile painter. There scarcely appears to be a question which might be raised regarding any part of the painter's job, whether it is the proper selection of a paint brush or the layout and management of a paint shop, which is not answered in considerable detail in this volume. Based upon British practice, as it is, the author's opinions may not always be accepted by American authorities but in view of the excellent coach work turned out in British shops, British practices certainly warrant consideration. In this second edition a long chapter on nitro-cellulose materials and their proper application has been added to the book to bring it in line with modern finishing developments.

Common Sense Applied to Selling

How to Influence Men. Edgar J. Swift. Charles Scribner's Sons, New York. 407 pp. $3.

IT is to be hoped that too many prospective readers of this book will not be scared away by its title, so suggestive of the many profound treatises on pseudo-psychological subjects which have kept printing presses busy during recent years. It is not that sort of book at all. In fact, Mr. Smith suggests that any statements from which the reader gets no intelligent meaning can be assumed to have no real value—for that particular reader, at least.

The psychology of selling that Mr. Smith talks about follows no definite rules, since no two persons respond equally well to identical stimuli. The basis of the theme presented seems to be that the salesman, or whoever has the job of influencing men, use intelligence and common courtesy in presenting his case, with particular attention being given to the other fellow's viewpoint.

World Trade Growth Dependent on *Mass Production*

Other countries must adopt our methods to increase buying power of people, says Roy Chapin at annual Foreign Trade Conference. Many countries represented.

By Lewis C. Dibble

WORLD commerce is in the infancy of its growth and the expansion of world trade will be accomplished by world-wide development of the American system of mass production, Roy D. Chapin, chairman of the board of the Hudson Motor Car Co., and president of the National Automobile Chamber of Commerce, declared in an address delivered at the Fourteenth Annual Foreign Trade Conference recently held in Detroit.

While none of the speakers spoke on subjects dealing exclusively with the automobile export business, the general discussions were of such a far-reaching and important nature as to command the attention of every manufacturer in the United States, particularly motor car producers who have overseas sales interests.

With threats made that the export business of the United States might suffer in certain countries because of America's attitude in discouraging imports through the continued use of its high protective tariff, there developed an interesting situation which brought an answer from no less a business leader in America than James A. Farrell, president of the United States Steel Corp., who delivered the final and perhaps most important address of the whole conference, when he declared that the world has become one market and that world-wide profit can come only by quieting debaters of international policy and by shunning such regulatory trade measures as invite retaliation and promote only friction.

Mr. Farrell backed up his assertions with statistics which prove interesting to any student of foreign trade relations.

"All must share in the commerce of the world, because no nation can buy except as it can produce and sell. In a modern world, the prosperity of one nation depends on that of the others," declared Mr. Chapin, who added, that the rapid progress in communication and transportation made possible by the automobile, press, radio, telephones, railroads and airplanes, is shrinking the world day by day.

Through the modern system of industrialism, in the creation and use of one product, such as the automobile, there is created simultaneously a demand for other products and on other markets, such as rubber, cotton, oil and copper, the speaker said. This stimulation of industry leads to greater prosperity, which in turn leads to higher standards of living and greater demands by the individual.

"And as we find new ways of meeting the needs of the individual we broaden the range of production. We find new fields for the employment of capital, labor and management, and in so doing we gradually raise the purchasing power of the individual, not alone here, but throughout the world," said Mr. Chapin.

"As I view the future, the manufacturing nations of the world are turning to the same methods of production as we employ. Only in this way can they compete successfully with us in world trade. Then we must come to a type of competition which can only result in decreased profits and consequent enmities, or we must all work together to develop new fields. Will we not prosper more, will not other countries prosper more greatly with us, if, instead of contenting ourselves with individual effort, we turn to mass salesmanship in partnership with other nations?

"We have demonstrated in the United States that there is room for everyone. Is it not our task then to join with other nations in applying the same principles to the development of world trade?

"Mass methods of production, instalment buying, credit extension are mediums which have led to mass consumption here which, in turn, implies high wages and high living standards. As other countries adopt them they will attain new peaks of production, hence will increase their buying power.

"These are the mileposts,

"AS I view the future," says Mr. Chapin at the Foreign Trade Conference which is reported in the accompanying article, "the manufacturing nations of the world are turning to the same methods of production as we employ.

"Only in this way can they compete successfully with us in world trade. Then we must come to a type of competition which can only result in decreased profits and consequent enmities, or we must all work together to develop new fields.

"Will we not prosper more, will not other countries prosper more greatly with us, if, instead of contenting ourselves with individual effort, we turn to mass salesmanship in partnership with other nations? We have demonstrated in the United States that there is room for everyone."

as I see it, which point the way to a sound and continued development of world trade. They do not imply any breaking down of competition, nor any arbitrary combination whereby the business of the world may be pooled. On the contrary, they have for their promise what I believe is the only sure basis for expansion —the prosperity of the individual," said Mr. Chapin in conclusion.

Dr. Luis Duhau, president of the Argentine Rural Society, was one of the speakers who complained that the sale of Argentine merchandise in America is being cut on account of the high tariff, and asserted that the future progress of South American countries would no doubt have a far-reaching effect on further expansion of the American motor car market. Dr. Duhau used many figures, especially those dealing with the automobile market, in presenting his arguments. His complaints were also concurred in by Eric H. Louw, commissioner of the United States of South Africa in the United States and Canada.

THE time has gone by when direct balances between separate nations can be struck accurately without reference to other countries," said James A. Farrell, president of the United States Steel Corp., at the Foreign Trade Conference. "The world has become one market. It is a vast composite of many sections, which, to suit our political convenience, we call empires, nations and countries, but which, in fact, insofar as trade is concerned, have been welded together by the development of recent years in those two fundamentals—transportation and communication.

"It is as futile to seek to maintain an even balance in the exchange of goods between any two nations as it would be, for example, to demand that the trade of any two of our States should show an even balance."

Discussing American trade in the Argentine, Dr. Duhau said: "The importance of our trade can be judged if we consider that it represents more than 80 per cent of the total trade of the United States with Latin America, that in 1925 amounted to 2000 million dollars.

Imports From U. S. 23.5 Per Cent

"Among our imports, those coming from the United States constitute 23.5 per cent of the total imports in 1925 against 13.8 per cent in 1910. Its volume could be greatly increased, for our virtual capacity of absorption of manufactured goods could be vastly developed.

"Let us consider, for instance, the trade in motor cars: Canada, with a population slightly inferior to ours, had, in 1926, 836,000 motor cars while those in the Argentine did not surpass 180,000.

"Ten years ago Canada possessed but 123,000 units, which shows the rapidity of its increase, and suggests the possibilities of Argentine as a market for that particular class of goods. Such prospects are closely connected to the making of public roads, which are one of the most urgent necessities of our country, and their construction has been postponed on account of our diminishing purchasing power, brought over by the decrease of our exports.

"These problems cannot be overlooked by the United States, because its large automobile production requires the intense development of foreign markets. According to H. H. Rice, of the General Motors Corp., the output in the United States in 1925 reached 4,000,000 motor cars, of which half a million were sent to other countries. The future progress of these countries is of capital importance to the automobile industry, for, the American consumption being very near the saturation point, it cannot continue its expansion, keeping up with the ratio of latter years.

"It is obvious, on the other hand," declared Mr. Duhau, "that the acquisitive capacity of foreign markets, with respect to automobiles and other manufactures, closely depends on the value of the purchases of the United States in these markets.

"Nevertheless, this country has not shown a great interest in stimulating Argentine exports; on the contrary, it has set against our products high custom duties, which become prohibitive in certain cases."

Eugene N. Foss, former Governor of Massachusetts, taking the place on the program of Herbert Hoover, Secretary of Commerce, who was unable to attend, declared that the United States should reconsider its tariff regulations as affecting Canada and South America in particular.

"The United States has never had, strictly speaking, a foreign trade policy equivalent in any degree to that practiced by the chief nations of the world with which we compete," declared Mr. Foss. "That is not the fault of the many business men, particularly those gathered at these conventions, who for years have striven for such a policy and have advanced so much towards its establishment along certain definite lines.

"The trouble with this country is that we expect too much and give too little. I do not mean that we are more selfish than other nations; but I do mean that we have a very elementary understanding of negotiations with other nations in matters of trade. Our administration is bureaucratic; our policy is not nearly broad enough and our information about the result of our policy is very defective.

"There really is a reason why South American countries should only take about 25 per cent of their imports from this country. True, that represents good progress within the last few years, but it is far short of what we should have. The reason lies in the fact that we are reluctant to compromise traffic barriers because of strong sectional objections.

Not a Political Question

"This is not in the slightest degree a political question, and I have not treated it as one. The reciprocal arrangement with Canada, for instance, was engendered under a Republican administration, and the friendly feeling towards a revival of those engagements is nonpartisan today.

"I am a Massachusetts manufacturer, and I want to see business interests safeguarded in this country. But I do not think our suspicions and fearful attitude towards Canada contribute either to our economic well-being or to our helpful contact with our greatest neighbor. I candidly think the Canadians had the better of the argument, when they contended that Americans were less conscious of the benefits of trade with Canada than Canada was of trade with United States.

"We have got to restore our interests in Canada to a more practical basis, and I earnestly counsel the manufacturers of the middle west and this great assemblage of foreign traders, which have honored you by meeting here in Detroit, to associate yourselves with this constructive movement for the great prosperity which comes from mutual confidence and the breaking down of out-worn and short-sighted barriers."

Mr. Farrell of the Steel Corporation summed up the convention when he said: "You have heard that the foreign trade of the United States last year continued to make substantially the same rate of growth that has marked its course for the last decade. Both exports and imports were greater in volume than they have ever been before.

Europe's Proportion Less

"Some phases of our present trade position are of particular interest. Europe's proportion of our exports is 14 per cent less than it was 12 years ago, and Europe furnishes 20½ per cent less of our imports than she did, in the average, during the 1910-1914 period. It is when other parts of the world are taken into account that the real development of our trade is clearly disclosed. While Europe's percentage of our trade has decreased during the last 12 years, the share of each of the other major divisions of the world has increased. We are selling more as we buy more, and that is as it should be. Imports from Asia, for example, have quadrupled in that time; and exports to Asia have more than quadrupled. This is plain fact from the trade statistics."

The world has become one great market and not a collection of rival markets, the steel magnate told his hearers, declaring that the prosperity of the United States and all other countries is along the line of increased production and lower costs.

"The international trade of the United States is growing steadily, and no doubt will continue to prosper as the purchasing and consuming power of the rest of the world gains. But our growth will not be fortuitous or gratuitous. It will be the result of our own intelligent effort. It is recognized that we possess industrial skill and enterprise in high degree, but that alone will not suffice. We must also see the international picture in perspective and not rely on our economic self-sufficiency. The development of our foreign trade is not only important, but essential to our national growth. It is a problem which calls for the cooperation of all concerned."

Mr. Farrell dealt at length with the complaints made that the United States is stifling trade with South American countries through use of its high tariff. "The time has gone by when direct balances between separate nations can be struck accurately without reference to other countries," said the speaker, "or when these direct balances can be taken as a criterion of the actual trade positions of these countries. The world has become one market. It is a vast composite of many sections which, to suit our political convenience, we call empires, nations and countries, but which, in fact, in so far as trade is concerned, have been welded together by the development of recent years in those two fundamentals, transportation and communication.

"It is true we may make statements of account between two nations with practical accuracy. But it is as futile to seek to maintain an even balance in the exchange of goods between any two nations of the world, as it would be, for example, to demand that the trade of any two of our states should show an even balance. We may almost as reasonably talk of even trade between Rhode Island and Michigan as between the United States and Great Britain.

"The suggestion comes to us not infrequently that we do not buy as much from certain countries as they buy from us. We have all heard, very recently, representatives of some of those countries speaking openly about measures that may be taken to compel a readjustment so that their sales to us shall more nearly equal our sales to them. It has even been hinted that an embargo will be laid on United States commerce despite the fact that we buy from South America as a whole over a hundred million dollars worth annually more than they buy from us.

"I venture to suggest that such schemes are unwise, impracticable and, above all, uneconomic. Measures of this kind inevitably provoke retorts in kind, and often in greater degree, invariably to the detriment of both sides. Wiser measures much more certain to produce beneficial results have the added advantage of being easier to operate, of moving along with, instead of against, natural economic channels.

"Moreover, the demand for an even balance of visible trade fails to take into account certain fundamentals of all trade, international or domestic, which in the end are always controlling. The chief object of any producer is to sell substantially all his products at as remunerative prices as he can get. That way lies the profit of the whole operation, as we have often set forth. It is consequently a matter of indifference whether the sale is in Buluwayo, Christmas Island or New York. Procedure effecting the sale, and in the delivery of the goods, may be greatly different in cases so widely separated as those cited, but precisely the same principle is involved in each. A manufacturer who produces a thousand machines a year has a thousand machines to sell, and each one sold reduces his problem one one-thousandth, no matter who or where the buyer may be."

London's Rubber-Paved Street

AFTER six months of service, rubber-block paving which was laid as an experiment in New Bridge Street, London, is said to be in perfect condition and to show practically no signs of wear, says *India Rubber World*. It is claimed that the heaviest and most intensive traffic in London passes over this street, which is a continuation of Blackfriars Bridge and ends in Ludgate Circus, linking the docks of the Thames with the great markets and heart of the city.

London's chief engineer reports that, after examination, it has been found that the pavement has not moved or crept; the rubber blocks are standing up to traffic without breaking, with grooves and the small lettering which had been indented on some of the blocks as sharp as when first laid; no water is going through the joints; a few blocks, out of an area of 700 superficial yards, are fraying on the sharp edges where those edges are lying proud, but this fraying will probably wear smooth and round; there is an absence of vibration, noise and dust; the pavement is easily cleaned; no wear appears on the surface of the paving, and, so far as is known, there have been no accidents due to the rubber.

THE Breeze Filter, a new insect-proof windshield screen for use on all cars equipped with the VV type of windshield, has recently been developed by the Albion Metal Products Co., Albion, Mich. The Breeze Filter is made of 30-mesh copper screen similar to that used for Pullman car windows, and is held in a steel rod frame finished to match the instrument board. Wings at each end anchor the screen in the windshield post and rubber bumpers eliminate vibration. With this equipment the windshield can be opened to any extent without danger of insects getting into the car while it is also said to exclude a large portion of dust and dirt. It can be installed in a very short time, there being no holes to drill nor no mutilation of the car necessary.

England Offers Subsidy to Users of Six-Wheel Trucks

War Department to pay £40 a year for three years to owners of vehicles designed according to its specifications. Government's transmission layout may be used.

By M. W. Bourdon

THE British War Department recently announced that it would pay a subsidy of 40 pounds a year for three years to users of six-wheeled trucks capable of carrying a load of three long tons and whose designs meet with the official specifications. These specifications have been drawn so that considerable latitude is allowed designers in the way of general power, weight and size factors. Through War Department patents, all makers have the use of a very good design for the suspension and transmission layout of rigid six wheel driving axles.

Some of the more important items included in the official specifications follow:

All engines will be subjected to a two-hour test under full load at a piston speed of 1000 f.p.m., and a run at full power for 10 min. at speeds increasing by steps of 200 r.p.m. from 600 r.p.m. until the peak is passed. The b.hp. must not be less than that calculated by dividing the revolutions by 40. Decarbonization of piston and cylinder head must be affected by one man in 5 hr. using only tools carried on the vehicle and examination of big end and main bearings must be effected in 5 hr.

Constructional requirements include arrangements to prevent piston pins scoring the cylinder walls if they work loose; provision of an oil filter; a lubrication indicator so fitted that the driver from his seat may feel whether the system is working; an oil level indicator to be fitted to the crankcase sump.

A positively driven dynamo is required, while the ignition is to be of high tension magneto type with hand spark control.

Fuel consumption during a 5 hr. road speed test must not be greater than nine miles per imperial gallon. All parts of the cooling system must withstand an internal pressure of 5 lb. per sq. in. After the tests the water temperature in the top of the radiator must not exceed 100 deg. Fahr. above atmospheric.

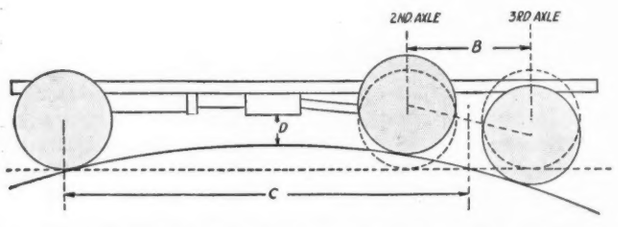


Fig. 1. Diagram showing general chassis requirements for participation in British six-wheel truck subsidy. Radius of arc which all wheels must touch to be not greater than 28 ft., 25 ft. if possible. B must be not greater than 4 ft.; C not greater than 12 ft. 6 in.; D not less than 10 ft.

The fuel system must maintain an adequate supply to the engine on all gradients mentioned in the specification and on any road camber even when the tank is nearly empty. The tank capacity must enable a fully loaded vehicle to run 120 miles on an average without refueling. Gravity feed is required with a two-way cock fitted to retain 2½ gal. in normal position and to release it to the carburetor in the third position of the cock.

The clutch must permit a fully loaded vehicle to be started from a standstill on high gear. Multiple disk or leather-lined clutches will not be accepted. A clutch stop must be provided. The gear range must be such that a factor of performance of not less than 55 may be obtained in negotiating bad going or extreme gradients when the "factor of performance" is:

$$\frac{A \times 2S \times N \times R}{W \times T}$$

when A = piston area in square inches
S = stroke in inches
N = number of cylinders
R = overall gear reduction in lowest gear
W = gross weight of vehicle for the road
T = effective circumference of tires in inches

The fully loaded vehicle must be able to (1) start from rest in both forward and reverse gears on a 1 in 5 gradient; (2) climb an average grade of 1 in 10 in not less than 5 m.p.h.; (3) maintain an average speed of 20 m.p.h. for 5 hr. on a route containing grades not exceeding 1 in 15; (4) cover one mile from a flying start on a level road at a speed of at least 30 m.p.h.

Vehicles are to be fitted with at least four forward speeds and one reverse. The gear box must have a test plug or cock to indicate oil level or, preferably, have an orifice through which oil level can be seen. Sliding type gear boxes are preferred.

Rear axles are to be of the fully enclosed type without tie rod and, preferably, fitted with oil filler orifice through which the oil level can be seen. Chain drives are not acceptable. All universal joints behind the gear box are to be of all-metal type.

Vehicles offered for acceptance under the subsidy scheme must have hubs, clearances, etc., enabling the wheel and tire equipment specified—24 in. wheel with 6 in. rim—to be fitted without delay; this being assured, alternative wheel and tire equipment will be permitted The performance factor will be based on a 36 by 6 in. tire.

A positively driven power inflator, not operated by engine cylinder pressure, capable of inflating a tire in

SIX-WHEEL TRUCKS

5 min. must be fitted. The outside diameter of the minimum turning circle must not exceed 50 ft. for either right or left lock. Stops must be provided to prevent the front wheel tires from fouling the chassis.

The ratio of useful load to the chassis weight should be from 1.2 to 1.4 but vehicles will be accepted when the ratio of the useful War Department load—3 tons— to chassis weight is not less than 0.9. This indicates a maximum chassis weight of about 3¼ long tons.

Fitted and driven bolts are preferred to rivets for parts liable to wear and replacement such as spring brackets. Holes are to be drilled, not punched. The minimum road clearance of all parts must be not less than 10½ in. on level ground.

Engine and gear box assembly should be three-point suspended. Chassis frames are not to be weakened by holes in flanges at points subject to severe stress. Maximum overall width is not to exceed 7½ ft. The front wheel track should not be more than 6 in. greater than the inner tire track of the driving wheels. The frame is to be braced against horizontal distortion due to direct or diagonal pull from towing ropes in any direction up to 20 deg. from the longitudinal axis.

Suspension of the driving axles must be such that within the limits indicated in Fig. 1 free relative movement of the wheels to follow the contour of the ground is permitted without disturbing the equality of weight distribution over these wheels. This equality of weight

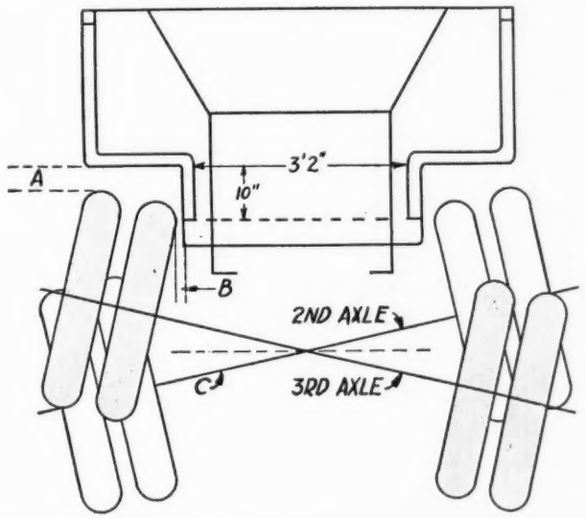


Fig. 2. Diagram showing minimum back axle clearances with the vehicle laden. A must not be less than ¼ in.; B not less than 1½ in.; angle C not less than 12 deg. for each axle

distribution must not be disturbed by conditions of torque, tractive effort or braking effort.

The upward movement of the axles is to be limited by rubber or spring buffers fixed to the frame members and downward movement must be limited by flat steel bands, wire rope or other straps encircling the axles and dependent from the frame side members.

Only freight-carrying bodies of reasonable weight will be accepted. No internal fixtures rendering the body unsuitable for bulk loads will be permitted. In the case of open truck bodies the sides and hinged tailboard must not be less than 18 in. high and may be detachable. Van bodies should preferably have a clear internal height of not less than 5 ft. nor more than 6 ft.

Normal clutch, brake and accelerator pedal arrangements are specified. Throttle and spark levers should preferably move forward to increase engine speeds and must move on a rack or an arrangement having equivalent effect and there must be an index plate showing the

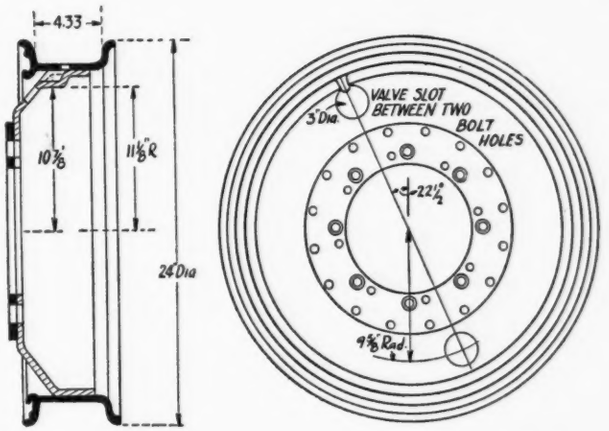


Fig. 3. Design and dimensions of approved pattern of road wheel

result of the movement. All connections for throttle, governor, ignition, etc., are to be made by means of rods or tubes; wire or chain are not permitted.

Either brake must stop and hold a fully loaded vehicle on a 1 in 5 gradient in either forward or reverse direction. The brake gear must permit continuous applications of one brake for a distance of half a mile on an average grade of 1 in 12 with the vehicle loaded and traveling at not less than 8 m.p.h. with the gear in neutral.

Either brake must be capable of adjustment without tools in not more than 5 min. The foot and hand brakes will be tested separately and must bring the vehicle to rest in a 1 in 5 gradient from an initial speed of 5 m.p.h. The speed of the vehicle must be kept at an average of 8 m.p.h. down a 1 in 12 grade for a distance of half a mile without overheating the brake, only one brake to be used and the gears in neutral.

The vehicle must be brought to a standstill while climbing a 1 in 5 grade and must be held by either brake and then restart from rest and continue the ascent. All brake wearing surfaces must be of large dimensions and easily renewable. Shoes must be fitted with easily detachable wearing surfaces. Preferably, brakes operating on driving wheels should be compensated and they must not be operated by rope or chain.

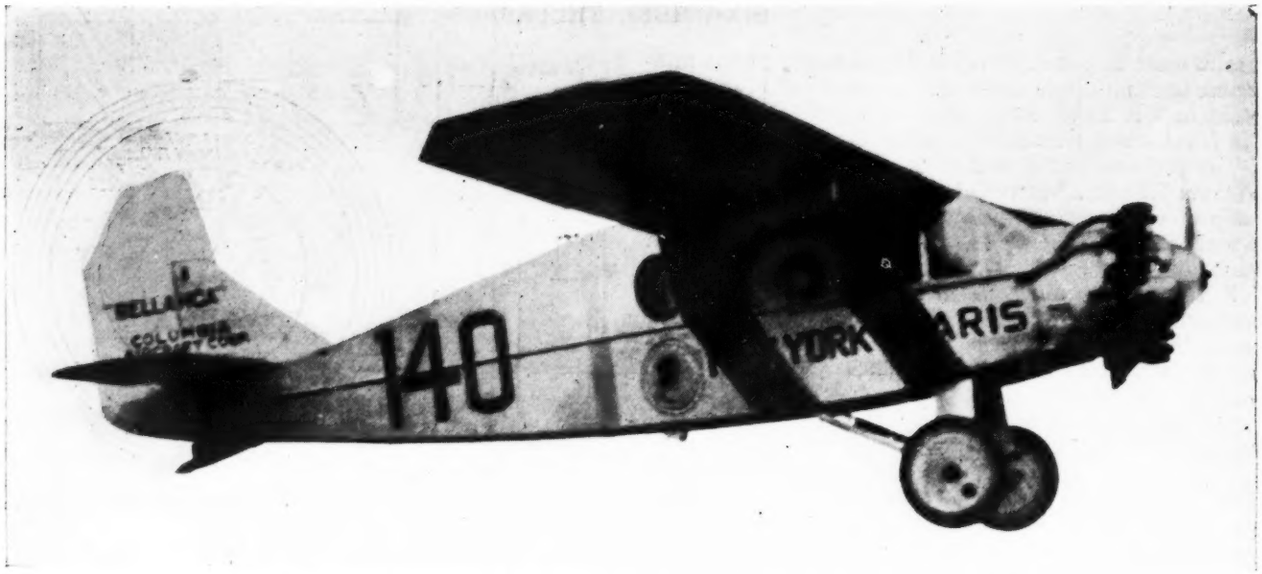
Oil lubrication throughout the chassis with high-pressure, rigid nozzle type gun is required. Engine lubrication system must be of sufficient capacity for a run of 200 miles with a fully loaded vehicle.

THE German Bureau of Statistics has resumed the gathering of statistics concerning the automobile and motorcycle industries and recently issued the results of its census for 1926.

During that year the German automobile industry produced 62,739 cars and chassis and 2014 engines for automobiles. Of these, 2505 cars and chassis and nine engines were exported, making the total exports 3.1 per cent of the production. The cars exported evidently were for the most part of the more expensive types, for the exports amounted to 5.1 per cent on a value basis.

Figures as to the number of employees, wages paid, value of raw materials purchased, value and nature of product, etc., were obtained from 234 enterprises, including 90 automobile plants, 73 motorboat plants, and 43 motorcycle plants, the remainder being aircraft and engine factories.

The number of employees in the automobile plants was 73,000.



The Bellanca plane with Wright engine which Chamberlin flew to Germany

Chamberlin's Plane *"Old"* in Service When He Hopped Off

Bellanca monoplane used on New York-Berlin flight had done well over 200 hours in air before taking off for 3905-mile trip across the Atlantic.

THE successful flight from New York to a point about 70 miles southeast of Berlin by Clarence D. Chamberlin and Charles A. Levine in the Bellanca monoplane "Columbia" adds one more honor to a plane and engine which had already made some remarkable aerial records.

This monoplane, built to Mr. Bellanca's design by the Wright Aeronautical Corp. in 1926 and powered with a Wright "Whirlwind," nine-cylinder, air-cooled, radial engine, is the same plane used by Chamberlin and Bertrand B. Acosta in setting up a new endurance record in April; it is the same plane which won first speed and efficiency honors at the National Air Races in Philadelphia last fall; and a plane of the same type won the highest efficiency prize for commercial planes at the National Air Races at Mitchel Field in 1925.

Chamberlin and Levine

Prior to the trans-Atlantic flight the Chamberlin plane and engine had to their credit well over 200 hr. of service in the air. Translated into distance flown, this would be equivalent to at least 20,000 miles, assuming an average speed of 100 m.p.h.

So the New York-Berlin plane is not an experimental design in any way. Early this year it was employed in a trial trip from New York to Washington carrying a full load of five passengers and the pilot for the purpose of obtaining relative cost-of-operation figures, which were surprisingly low.

The only change which was made in the plane for the trans-Atlantic trip was installing extra fuel tanks in the cabin to replace the chairs ordinarily located there and the addition of the necessary instruments for the long voyage.

The wing construction of

the plane is conventional and the wings are braced externally by the well-known Bellanca struts, two on each side, whose lift not only more than compensate for their weight but whose marked dihedral adds considerably to the lateral stability of the plane.

The fuselage is constructed in three sections made up of chrome-molybdenum steel tubing. Vision is exceptionally good because of the high-placed wings and the installation of windows all around the cabin.

Total cabin space is 140 cu. ft., which provides ample room for five passengers or mail freight transport.

General details of the plane as originally built for commercial service and as used on the New York-Berlin flight are:

Span	46 ft. 6 in.		
Length	26 ft. 9 in.		
Height	8 ft. 9 in.	(With landing gear)	
Wing chord	6 ft. 7 in.		
Weight empty	1,850 lb.		
Weight loaded	3,454 lb. Std.	5,400 lb.	New York-Berlin
Weight per hp.	17.2 lb.	27 lb	" " "
High speed	130 m.p.h.		
Cruising speed	110 m.p.h.		
Landing speed	47 m.p.h.		

The Wright J-5C Whirlwind engine employed in the plane has participated in all the honors which fell to the Bellanca plane prior to its latest exploit and, in addition, was the same type engine used by Capt. Charles Lindbergh on his New York-Paris flight.

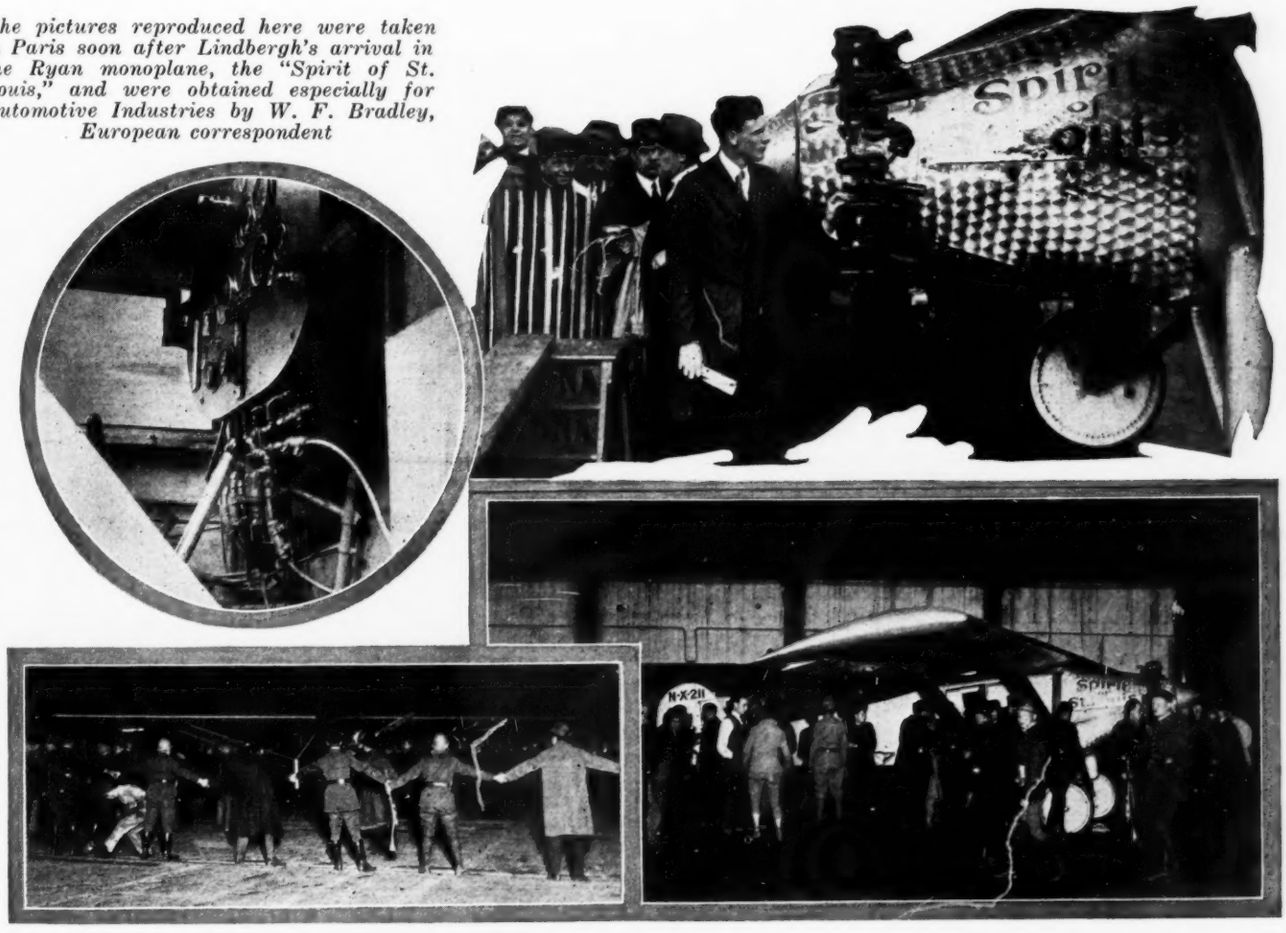
Chamberlin is credited unofficially with a non-stop flight of approximately 3905 miles, this being the estimated distance over his course from New York to Eisleben, about 110 miles southwest of Berlin, where he made his first landing after taking off from Roosevelt Field 42 hours before. Capt. Lindbergh covered 3610 miles on his historic trip from New York to Paris.

Chamberlin's average speed on the basis of his estimated mileage and time in the air was about 93 m.p.h., as compared to Lindbergh's 108 m.p.h.

The Bellanca plane is now the property of the Columbia Aircraft Corp. of New York, of which Mr. Levine is an official.

Lindbergh and His Airplane in Paris

The pictures reproduced here were taken in Paris soon after Lindbergh's arrival in the Ryan monoplane, the "Spirit of St. Louis," and were obtained especially for Automotive Industries by W. F. Bradley, European correspondent



Upper left—Instrument board of Lindbergh's trans-Atlantic plane. Upper right—Lindbergh examining his plane after a refreshing sleep and a change of clothes. Lower left—Soldiers, police and civilians guarding the plane at Le Bourget. Lower right—The plane in the aviation shed at Le Bourget

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	PASSENGER CARS										TRUCKS					
	Up to $500		$500 to $800		$800 to $1200		$1200 to $2000		Over $2000		Up to 1 ton		1 to 2½ Tons		Over 2½ Tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Austria					21	$16,961	4	$5,224	2	$3,504						
Azores and Madeira Islands	3	$1,094	3	$1,654	1	810					7	$3,156				
Belgium	240	105,225	652	332,627	493	432,974	416	529,304	46	98,159	720	316,230	48	$15,438		
Bulgaria					17	14,819										
Czechoslovakia	44	17,807	11	6,318	49	44,974	7	9,430	1	3,119	38	12,796				
Denmark and Faroe Islands	2,156	601,665	1,264	505,827	594	471,167	173	194,269	15	34,376	1,041	457,915	5	5,458		
Esthonia											1	740	1	1,058		
Finland			122	73,345	179	154,268	130	156,457	42	80,428	4	3,174	22	29,550	4	$12,600
France					23	20,497	47	58,357	24	54,404	7	3,672				
Germany	31	10,074	3	1,852	896	756,795	180	208,917	122	322,177	20	7,984			1	6,850
Gibraltar																
Greece	114	40,796			12	9,113	4	5,026	1	3,000	41	13,396				
Hungary			6	2,600	18	14,870	13	14,578					1	1,377	1	2,383
Iceland																
Italy	33	11,634	23	11,669	6	5,465	11	14,649								
Latvia					21	17,537							2	2,319		
Lithuania									1	2,264						
Malta, Gozo and Cyprus					2	1,671	1	1,241								
Netherlands	1	137	138	82,048	88	75,710	112	144,942	21	54,386			12	16,321	1	5,580
Norway	3	828	32	18,792	75	59,986	25	31,622	12	26,165	2	1,612	6	5,046	1	4,300
Poland and Danzig			1	642	28	25,396	3	3,219	2	5,123						
Portugal	30	10,500	30	17,795	54	43,409	18	20,122	1	3,040	36	11,269	4	4,256		
Rumania	140	49,939	10	4,841	70	55,786	49	55,249	16	30,543	218	72,245				
Russia											22	7,483			3	24,344
Spain	1	360	200	115,315	316	272,090	191	239,220	70	172,225	304	146,711	17	16,858	1	3,410
Sweden			342	205,679	271	228,597	158	192,414	38	82,862	11	7,810	15	18,537	6	6,042
Switzerland	5	2,238	11	8,388	4	3,850	24	28,945	21	49,156						
Turkey	25	8,476	4	2,240	29	23,713	9	12,392	1	3,773	31	12,934				
United Kingdom	1	150	1,210	792,601	850	707,774	93	131,562	79	188,396	912	335,820	5	7,975	1	1,914
Irish Free State			8	6,738	9	7,373					3	2,214	2	2,817		
Yugoslavia			5	3,519	28	23,756	3	2,946								
United States																
British Honduras	1	352					4	4,892								
Canada	377	113,738	2,855	1,651,026	1,289	1,293,294	606	1,013,211	190	465,322	229	145,424	321	409,458	33	113,723
Costa Rica	1	272	5	3,426	20	15,588	12	13,255			4	3,184	4	4,648		
Guatemala			7	4,344	24	22,265	22	25,786	6	11,675	3	1,425	7	9,009		
Honduras	3	896			2	1,494	2	2,162								
Nicaragua	2	850	1	624									1	3,245	1	5,400
Panama	120	48,260	7	4,072	14	12,642	6	6,679			115	46,605	1	1,730		
Salvador	1	330	2	1,590	5	3,854	3	2,708	2	5,357	2	739			2	4,263
Mexico	226	84,134	136	83,003	95	84,872	31	44,733	13	32,230	69	35,439	29	45,019	8	30,833
Miquelon													1	425		
Newfoundland			36	22,863	19	16,522	9	10,501			4	1,754				
Barbados																
Jamaica	7	2,428	21	11,995	14	10,219	5	5,837	1	1,824	33	12,288	2	2,336		
Trinidad			1	696	9	8,020							3	4,123		
Other British West Indies	14	4,121			2	1,510	1	1,324			11	3,404	37	41,624		
Cuba	165	50,363	288	136,528	74	64,428	32	45,521	24	65,909	157	65,980	23	32,590	19	75,147
Dominican Republic	17	6,376	3	2,021	4	3,320	6	7,318	7	18,175	2	1,518				
Dutch West Indies	1	500	2	1,150	3	3,097			1	2,245	25	13,665				
French West Indies	1	475			1	934										
Haiti	3	1,062	3	2,134	1	982					4	1,798				
Virgin Islands	1	354											1	1,455		
Argentina	1,084	432,170	930	552,773	541	468,885	265	322,127	39	101,434	590	299,088	19	24,853	38	76,818
Bolivia					3	2,520	5	5,623	1	1,871			2	3,618	1	4,616
Brazil	1,031	391,788	336	210,647	702	580,924	234	245,064	25	56,270	2,137	810,438	7	21,749	5	25,695
Chile	36	8,945	22	13,303	58	47,800	45	52,221	8	16,646	80	25,432	22	36,303	2	5,604
Colombia	25	8,778	10	6,585	73	64,366	81	92,806	9	19,328	64	26,422	103	200,479	6	10,211
Ecuador	2	708	3	2,023	9	8,640	4	4,560	4	5,314			4	5,689		
British Guiana																
Dutch Guiana	5	1,770									2	702				
Paraguay	10	3,508									6	1,938				
Peru	73	26,716	4	2,257	21	17,960			2	3,256	82	29,184	8	10,550		
Uruguay			133	72,577	71	59,328	33	39,044	9	22,993	92	43,908	17	59,966	2	4,931
Venezuela	78	26,961	26	16,252	61	50,573	47	52,567	8	15,034	59	22,916	7	9,904		
Aden	1	354	6	3,260	3	2,254										
British India			60	36,873	254	213,415	24	28,172	1	3,040	95	70,378	25	29,088		
Ceylon			1	609	42	34,969			1	2,716	12	9,420	3	6,564		
Straits Settlements			17	11,066	19	16,553	10	11,271	1	2,439	4	2,733	7	8,410		
China	5	1,410	16	12,954	22	21,886	17	24,869			24	10,604	16	19,267		
Java and Madura	11	4,741	391	199,451	213	179,597	26	30,094	18	50,119	307	151,781	25	23,233		
Other Dutch East Indies			7	3,742	20	17,192	8	9,001			10	5,887	4	3,712		
French Indo China			4	2,980	1	1,014										
Hejaz, Arabia and Iraq	73	25,729			3	2,760					27	10,540				
Hongkong			9	6,516	4	3,820										
Japan	1	400	63	39,748	81	77,591	33	42,476	12	30,345	10	6,971	3	4,388	1	3,156
Kwantung																
Palestine and Syria	71	25,750	16	9,811	24	18,909	27	33,388			5	1,679	2	2,165		
Persia	67	24,057			12	10,948	3	3,237			26	8,393	3	2,206		
Philippine Islands	54	19,092	165	99,760	68	65,820	37	50,806	18	41,695	195	68,898	9	15,256		
Russia											20	12,238	8	8,578		
Siam			1	704	9	6,739										
Turkey	33	11,698									26	10,588				
Other Asia																
Australia	512	214,115	1,328	631,177	990	744,556	525	592,843	92	184,876	1,925	898,048	222	290,092	62	129,484
New Zealand	160	65,585	42	23,952	128	113,071	60	71,678	8	15,032	72	30,026	15	23,051	1	2,584
British Oceania	4	1,745			5	4,208					1	360				
French Oceania	4	1,130	1	630	3	3,135					1	328				
Other Oceania																
Belgian Congo			5	2,685									1	1,218		
British West Africa	2	854	17	9,504	6	5,215	1	1,190			24	11,771	77	90,713		
British South Africa	675	251,400	499	262,548	553	444,907	292	334,782	3	7,303	146	76,066	71	70,590	2	4,455
British East Africa			42	24,559	41	32,882	22	24,633			1	345	23	24,700		
Canary Islands			2	1,196	4	3,292	2	1,964					1	1,363		
Egypt	126	45,584	192	73,260	27	22,698	15	16,552	3	8,095	166	60,419	1	1,335		
Algeria and Tunis			3	2,268	10	8,846	3	3,383			4	1,836				
Other French Africa																
Liberia					1	769					25	10,386	9	25,821		
Madagascar	8	2,624			1	1,046					22	7,716	4	4,074		
Morocco	13	3,830			15	14,237	3	3,629			24	8,553				
Portuguese East Africa					21	16,436	6	7,995								
Other Portuguese Africa			1	624	4	3,278	3	3,306			10	7,696				
Spanish Africa											1	1,114	2	1,892		
Total	7,931	$2,776,876	11,794	$6,456,256	9,853	$8,425,441	4,241	$5,353,283	1,021	$2,407,643	10,371	$4,495,186	1,290	$1,713,499	202	$564,343

for April, 1927 | Canadian Exports

ELECTRIC VEHICLES		PARTS	TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
			Casings		Inners		Solids		Up to $500		$500 to $1000		Over $1000					
No.	Value	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
		$4,006	2,092	$36,990	1,794	$3,939												Austria
		1,047	110	1,487	24	52												Azores and Madeira Islands
		193,442	4,093	37,609	1,729	4,466					2	1,668	4	4,804			1,103	Belgium
		60	20	244											6	2,323		Bulgaria
		3,714	663	9,286	364	918	26	1,697										Czechoslovakia
		206,381	29,648	346,891	24,583	31,994	3	62					10	11,740			46	Denmark and Faroe Islands
		808	15	374	5	9	14	593										Esthonia
		39,052	1,542	27,007	1,487	3,931			13	6,235	36	19,727	17	20,730			432	Finland
		65,855	2,754	46,998	1,921	5,612					3	2,110						France
		822,746	10,443	153,855	2,914	8,828	8	155					33	44,632			4,324	Germany
			28	321	6	27												Gibraltar
		11,136	1,806	21,168	15	54	20	1,050									432	Greece
		4,388	74	1,173			12	358										Hungary
			65	800														Iceland
		70,459	2,775	25,746	972	1,961	6	132										Italy
			78	1,711														Latvia
		268	122	1,137	122	201												Lithuania
		961									1	873	1	1,174	4	1,549		Malta, Gozo and Cyprus Is.
		45,161	4,393	81,894	2,259	5,509												Netherlands
		14,477	2,688	54,024	1,996	5,149	138	6,222	41	19,885	34	20,846	8	8,620			432	Norway
		1,085	4,052	50,580	2,460	2,852	14	537			2	1,600	2	2,286				Poland and Danzig
		11,238	1,467	16,345	253	496	6	97										Portugal
		5,679	3,010	36,183	2,551	5,442	24	1,975	54	24,417	2	1,098	5	5,050	6	2,323		Rumania
		10,044	240	3,042	580	1,196											15	Russia
		95,030	3,124	46,266	3,023	5,099	506	14,242										Spain
		76,118	13,550	214,876	7,390	16,595	6	286										Sweden
		8,433	3,277	68,151	2,552	7,883	68	4,326			10	5,022	2	2,304				Switzerland
		8,337	771	8,385	185	322			2	834								Turkey
		515,158	32,771	426,908	15,386	29,683	1,151	26,329	198	58,856	287	211,118	153	183,509	3	3,420	8,403	United Kingdom
		37,934	400	2,643													385	Irish Free State
		195	680	8,158	330	520			64	25,675					28	10,665		Yugoslavia
		607	19	170	40	88			8	2,125	1	580					11,228	United States
											2	1,090						British Honduras
2	$3,037	4,932,638	3,342	56,813	4,669	9,094	82	2,287										Canada
		8,597	371	6,367	107	377			13	5,121	6	3,096	1	1,060	16	6,195		Costa Rica
		19,480	707	14,751	627	1,850	2	73	3	1,289	1	572	1	1,129	4	1,549	50	Guatemala
		2,704	48	563	72	148	10	499										Honduras
		2,565	14	232	29	69											14	Nicaragua
		99,779	1,585	16,466	776	1,501	110	2,442					2	2,229			40	Panama
		8,446	240	4,554	175	594	31	894										Salvador
		136,418	6,945	78,729	5,710	10,905	63	1,921			4	3,463	7	8,802			50	Mexico
																		Miquelon
		3,305	288	3,871	173	393	10	379									386	Newfoundland
		2,845	31	306	12	18	4	200	3	1,273	3	2,576	2	2,040	2	507	450	Barbados
		23,841	139	1,566	14	23	180	4,653	24	9,912	14	9,485			14	5,421	13	Jamaica
		9,545	30	314	28	48	8	240	19	6,371			2	2,316	30	10,023		Trinidad
		7,718	82	1,009	48	81			7	2,840	1	543			4	1,586	3	Other British West Indies
		111,324	9,007	83,489	3,911	8,567	770	22,733			1	850	1	1,122				Cuba
		7,880	647	8,996	521	1,221	30	789										Dominican Republic
		4,868	515	4,934	584	1,007									6	2,323		Dutch West Indies
		1,131	30	592	24	92			5	2,095								French West Indies
		4,779	502	10,233	482	1,281	20	819	4	1,612	2	1,100						Haiti
		228	18	243	33	56	16	414										Virgin Islands
		347,270	30,364	322,197	12,609	21,265	1,064	27,485			19	18,007	8	9,272			75,874	Argentina
		3,897	100	2,765	39	135							3	3,570	10	3,872		Bolivia
		347,203	12,883	151,548	7,276	10,898	85	3,452	10	4,790	53	45,890	29	30,996			150	Brazil
		82,366	3,852	62,575	3,129	6,002	66	2,766	16	7,291	10	7,333	10	11,200	29	11,075		Chile
		92,887	3,022	55,273	3,190	9,278	49	2,423	91	37,467	11	10,227	18	20,740	108	44,786	922	Colombia
		5,255	555	7,025	230	419	16	568			2	1,880						Ecuador
		2,854							3	1,300	3	1,730					129	British Guiana
		352	44	271	36	46	4	67										Dutch Guiana
		3,479	125	1,401	35	52							2	2,287				Paraguay
		60,798	1,420	28,225	958	2,767	16	573	40	16,498	3	1,629			38	14,713	6	Peru
		65,915	2,501	28,761	2,187	2,139	110	5,059	18	8,732	7	5,918	4	4,326			6	Uruguay
		69,374	4,590	45,077	2,534	5,760	1	77	48	19,436					46	17,810		Venezuela
		1,962	50	401	54	83			3	816	16	11,610			4	1,283	7	Aden
		116,090	9,842	130,010	2,921	5,035	486	15,670	377	164,783	43	31,531	20	20,869	434	157,643	38,036	British India
		14,819	1,044	15,103	902	2,261	81	2,139	35	14,423			2	2,153	34	11,797	1,730	Ceylon
		28,029	5,291	43,098	200	630	43	1,442	188	74,247	9	5,145					28,889	Straits Settlements
		27,730	1,249	14,457	420	881	48	1,181			4	3,829			6	2,323		China
		71,312	5,214	57,813	2,533	4,100	113	4,320			83	66,571	24	27,982			19,880	Java and Madura
		13,505	1,409	18,349	854	1,474	10	189										Other Dutch East Indies
		42																French Indo China
		4,780	227	2,729	71	118			22	9,180					21	8,044		Hejaz, Arabia and Iraq
		2,096																Hongkong
2	2,240	537,429	7,680	56,973	4,786	6,163	949	15,265	48	17,760	4	3,779					13,831	Japan
		656																Kwantung
		15,462	176	2,651	122	216	4	119										Palestine and Syria
		12,933	236	5,988	12	31	205	6,721	2	834					10	3,926		Persia
		36,531	11,148	138,000	9,471	20,261	492	12,763										Philippine Islands
		3,529																Russia
		3,947															4,374	Siam
		4,083	280	2,821	411	726												Turkey
		247																Other Asia
		443,831	6,301	113,451	2,094	6,767	1,254	67,937	164	68,802			4	5,508			47,281	Australia
		100,022	785	9,510	557	1,237	148	5,757									39,282	New Zealand
		2,023	50	646	77	171									3	801	4	British Oceania
		1,095	2	22														French Oceania
									1	414	1	892			10	2,828		Other Oceania
		1,530																Belgian Congo
		37,210	487	10,073	399	1,582			23	9,203	1	573	1	1,010	97	33,440	1,727	British West Africa
		148,696	5,334	65,800	3,336	5,485	18	574	49	16,570	22	11,370	6	6,951	25	8,779	29,326	British South Africa
		16,311	1,190	16,164	593	1,117	24	434	48	18,215	3	1,715	2	2,020	76	29,949	2,092	British East Africa
		1,306	682	11,352	198	509	54	2,506			9	6,786	2	2,252				Canary Islands
		124,565	420	5,607	284	642	38	1,419	175	72,658	2	1,073	2	2,020	30	11,615		Egypt
		1,690	107	1,123	124	179	18	590										Algeria and Tunis
		231													2	812		Other French Africa
		2,893	36	538	58	147												Liberia
		3,504															244	Madagascar
		12,481	1,057	22,341	1,060	1,887	30	721										Morocco
		5,514	144	2,286	90	208	2	54										Portuguese East Africa
		6,050	3	30	6	12			6	2,165					39	13,999	690	Other Portuguese Africa
		800	30	289	30	53												Spanish Africa
4	$5,277	$10,528,494	271,241	$3,477,193	156,822	$300,887	8,766	$278,675	1,825	$734,124	717	$524,905	388	$456,703	1,145	$427,379	$332,286	Total

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Saturday, June 11, 1927

Seasonal Conditions Bring Factory Operations Lower

PHILADELPHIA, June 11—Sales and production conditions in the automobile industry are so spotty that it is difficult to arrive at an average for the whole business. While the general level is undoubtedly around 10 per cent under that of a year ago, and while the trend is seasonally downward, these factors have not prevented a few of the outstanding companies from maintaining output at or near record high levels.

With Ford out of production, except of parts, for this month at least, the production total for the industry will show a sharp drop. Several of the producers who customarily introduce model changes in the summer have already started preparations, which will also influence the total. The changes are being made rather earlier than has been the custom, and price cuts are another symptom of the same condition. Unsatisfactory sales and keen competition are accelerating moves designed to bolster the market at the period of seasonal dullness.

Sales have held up very well in the eastern and far western states, the middle west and south contributing most of the losses. Used car stocks have been lowered, with considerable benefit to the retail end of the business, but new car stocks have not shown the curtailment expected at this time and in some important lines the need for a cleaning up process is becoming recognized.

The export market is excellent and without the gains registered in overseas sales this year the industry's falling off from the levels of a year ago would have been much more pronounced.

Big Advertising Campaign to Launch New Ford Car

PHILADELPHIA, June 8—Ford Motor Co. will embark on an extensive advertising campaign to promote the sale of its new car, according to N. W. Ayer & Son, which has been awarded the contract to handle all advertising on the Ford car, Fordson tractor and the products of the airplane division of the Ford company. The Lincoln car is not included.

The Ayer company is now conducting a wide survey to determine the selection of mediums which will be used in promoting the sale of the car.

Elcar Signs 38 Dealers

ELKHART, IND., June 00—Elcar Motor Co. reports the signing of 38 new dealers in the 45 days following April 1.

General Chromium Formed in Detroit

DETROIT, June 6—General Chromium Corp. has been organized by leading companies in the electro-chemical industry, it was announced today, for the consolidation of important patent rights in chromium plating and for the development of a chromium plating process of great importance to the automotive industry. The General Chromium Corp., Union Carbide & Carbon Corp., through its subsidiaries the Electric Metallurgical Co. and the Union Carbide & Carbon Research Laboratories, Inc., and the Vacuum Can Co., have consolidated their patent rights into the new corporation. The process identified by the patents is called Duro Chrome.

The General Chromium Corp., with its factory and electro-chemical laboratories at Detroit, and affiliated laboratories and plant at Chicago, and the affiliated laboratory at Niagara Falls, will operate as a production company and will also license and furnish an engineering service for the Duro Chrome process.

F. J. Fisher on Board

The board of directors of General Chromium Corp. is made up of Fred J. Fisher, General Motors Corp.; Benjamin O'Shea, Union Carbide & Carbon Corp.; F. M. Becket, president of Union Carbide & Carbon Research Laboratories, Inc., Burton O. Smith and C. Roy Gleason of Vacuum Can Co.

M. E. Louth, general manager of the General Chromium Corp., was for six years general manager of the Edylite Corp. Associated directly or in an advisory capacity are F. M. Becket, M. J. Udy, G. K. Herzog, Dr. Julius Becker, C. Roy Gleason, C. H. Eldridge and V. L. Soderberg.

Dealer Stocks Reduced

DETROIT, June 6—The Chrysler Corp. reports dealer stocks at the close of May to be at the lowest point they have reached since Jan. 20, this year. This condition followed five record-breaking weeks of retail deliveries.

Aircraft Production Totals 1253 in 1926

WASHINGTON, June 6—Exports of American aircraft and parts in 1926 were valued at $1,039,000, while domestic production increased to 1253 planes, according to an announcement by the automotive division of the U. S. Department of Commerce. The export value increased more than 33 per cent over 1925. Aircraft engine exports increased 11 times in number and three and one-half times in value, with an unmistakable trend toward air-cooled motors.

Moock Appoints Kirkland Accessory Division Head

CHICAGO, June 6—Following the appointment of Martin E. Goldman as manager of the shop equipment division of Greater Market Development Bureau of the Automotive Equipment Association, announcement is made by Harry G. Moock, managing director of the bureau, of the appointment of Henry T. Kirkland as manager of the accessory division.

James H. Collins, who was recently announced as manager of the accessory division, has taken over the work of the commercial information division.

Mr. Kirkland, during the past year, has been zone manager of the merchandising division of the A. E. A. in the eastern states.

With the naming of a manager of the service parts division, whose selection will soon be made, the organization personnel of the marketing bureau will be completed.

Goodyear Reduces Prices to Meet Mail Order Cut

AKRON, June 8—Goodyear Tire & Rubber Co. has reduced prices on its Pathfinder tires about 5 per cent to meet the recent reductions in price made by mail order houses. Similar reductions have been made effective by Firestone, Goodrich, United States and Miller.

The tires affected are principally the 3½ in. sizes in the fabric group, but the trade is uncertain as to the trend of prices on other sizes and types. Sales of practically all tire sizes and types have been at high mark through the quarter.

Kelly-Springfield Tire Co. has advanced prices on its air-core truck tires 17 to 21 per cent.

National Aviation Conference Formed

Development of Commercial Flying in United States is Primary Purpose

ST. JOSEPH, MO., June 7—Organization of the National Conference for Development of Commercial Aviation was perfected here this week by a group comprising aviation experts, representatives of the Federal government, governors, heads of railroads and steamship companies and aircraft manufacturers following a two-day conference.

The development of commercial aviation to assist in making the United States first in the air will be the primary purpose of the organization. As an important step toward this, the conference will urge the immediate development of adequate landing field facilities throughout the country.

Officers Widely Known

Officers of the conference selected were Hume Lewis, Denver banker, president; R. R. Clark, St. Joseph, vice-president; Rodman Wanamaker, New York, second vice-president; Charles H. Wagner, South Bend, third vice-president, and Marion E. Cox, St. Joseph, secretary-treasurer.

The next two annual meetings will be held in St. Joseph. Invitations from other cities will be accepted after 1929.

Resolutions congratulating Lindbergh and Chamberlin on their trans-Atlantic flights were adopted and they were voted honorary life members of the conference.

40-Passenger Plane Planned by Bellanca

NEW YORK, June 7—A company to build and operate multimotored airplanes, each capable of carrying 40 passengers to Europe on a commercial basis, is being organized by G. M. Bellanca, designer of the airplane Columbia in which Clarence Chamberlin made his flight to Germany Ample financial backing has been assured, according to Mr. Bellanca, but he declined to reveal the names of his associates.

"Experimental work on the type of plane will cost $175,000," he said, "but the planes, themselves, probably of the biplane type, will cost in production about $30,000 each, exclusive of the engines, and we can't say yet how many engines will be required."

The projected craft will have about 2500 sq. ft. of wing surface and will carry 40 passengers, allowing 170 lb. a passenger and 30 lb. each for baggage. Ability to weather rough seas will be one of the essentials of the new craft, he declared.

Total flying time from New York to Paris will be 32 hours. Stops will be made at Newfoundland and the Azores, where gas will be taken on, bringing the total flying time to 36 hours. The planes, he said, would have a cruising speed of 120 miles an hour. There will be room to walk around, comfortable chairs in which to lounge and comfortable berths for sleeping.

Drivurself Begins Renting of Trucks

CHICAGO, June 8—Extension of the Hertz Drivurself Stations, Inc., to include truck transportation was initiated today according to C. W. Litsey, vice-president and general manager. The company's four most central stations have been selected to set this activity in motion.

The same conditions governing car rentals will apply to truck renting, Mr. Litsey said. Any one whose name appears in the telephone directory may rent one or more trucks and those not listed will be accommodated by giving references.

The initial equipment includes model T-20 General Motors trucks and Chevrolet one-ton trucks. Panel body types are used. Trucks of other sizes and types will be added as they are required.

Yellow Truck Elects Officers

DETROIT, June 8 — The regular quarterly dividend of $1.75 a share on the preferred stock, payable July 1, to stock of record June 20, was declared today by the Yellow Truck & Coach Mfg. Co., which also elected the following officers: J. D. Hertz, chairman of the board; J. A. Ritchie, vice-chairman of the board; P. W. Seiler, president; I. B. Babcock, P. H. Emerson, P. H. Geyser, G. A. Green, vice-presidents; I. B. Babcock, treasurer; E. N. D'Ancona, secretary and general counsel, and E. R. Brach, comptroller. Members of the board are J. D. Hertz, I. B. Babcock, Albert Bradley, Fred J. Fisher, H. E. Foreman, Charles McCulloch, J. L. Pratt, J. A. Ritchie, P. W. Seiler, A. H. Swayne and William Wrigley, Jr.

Timken, Bohn and Mack Fix Dividend Payments

NEW YORK, June 9—Timken Detroit Axle Co. declared an extra dividend of 5 cents and regular quarterly dividend of 15 cents, both payable July 1 to stock of record June 20. These are the same as in preceding quarters.

Bohn Aluminum & Brass Co. declared a quarterly dividend of 37½ cents, payable July 1 to stock of record June 15, increasing the rate to $1.50 annually from $1.

Mack Trucks, Inc., declared regular quarterly dividend of $1.50 on the common and $1.75 each on the first and second preferred stocks, all payable June 30 to stock of record June 17.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co.*

NEW YORK, June 9— Unfavorable weather over wide areas continues to produce irregularities in trade and in agriculture. Seasonal recessions in basic industrial lines are clearly evident. The stock market remains very active, with prices still advancing and brokers' borrowings near the peak. Commodity prices advanced slightly last week, while money rates were practically unchanged.

RETAIL SALES

Sales of two leading mail-order houses were fractionally larger in May than a year earlier, while the total for the first five months of the year is very slightly smaller than that of a year ago. Aggregate sales of eight chain stores systems were 7 per cent larger last month than a year ago, and the five months' total shows a gain of nearly 13 per cent.

FREIGHT CAR LOADINGS

Railway freight car loadings during the week ended May 21 numbered 1,016,803, as against 1,029,126 in the preceding week and 1,039,070 in the corresponding period last year. The decline is attributed mainly to the Mississippi floods.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended June 1 were 2.4 per cent smaller than the total for the preceding week but 12.4 per cent above that for the corresponding period last year.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices stood at 140.1 last week, as compared with 139.9 a week earlier and 140.1 four weeks earlier. The farm price index of the Department of Agriculture advanced last month from 125 to 126 per cent of the five-year pre-war average.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks increased $101,300,000 during the week ended June 1, with gains of $67,900,000 in discounts and $40,600,000 in holdings of Government securities and a decline of $7,200,000 in open market purchases. Note circulation increased $34,600,000 and deposits $41,000,000, while reserves decreased $24,000,000. The reserve ratio declined from 78.8 to 76.8 per cent.

During the same period, loans of reporting member banks increased $197,000,000, the principal change being a gain of $202,000,000 in loans secured by stocks and bonds. Investments declined $67,000,000, while borrowings from the Federal Reserve banks increased $70,000,000 and net demand deposits $222,000,000. Loans to brokers and dealers, secured by stocks and bonds, made by reporting member banks in New York City increased $97,000,000.

Vacation Poster Opens A.E.A. Drive

Features Summer Needs of Motorists in Opening Greater Marketing Campaign

CHICAGO, June 4—A large poster in eight colors has been prepared by the Greater Market Development Bureau of the Automotive Equipment Association for use in promoting summer sales of automotive accessories, supplies and service.

Depicting a happy party of motor tourists approaching a bathing beach, the poster calls attention to the equipment used on the car to add to its utility and increase the enjoyment of the passengers. A legend across the top of the picture says: "Drive your car on every trip," and another at the bottom reads: "Let us provide the things you need." Across the bottom of the poster is this advice: "Before you start we'll test your motor and brakes and make sure that all equipment is properly adjusted."

On either side of the picture is listed the equipment motorists should have before starting on vacation trips. Under the heading, "For Greater Safety," is this list: Bumpers, fire extinguisher, chains, locking bar cap, horn, stop signal, mirror, heat indicator, tire lock, parking lamp, spot light and windshield wiper.

The following items are listed under the heading "For Greater Comfort": Driver's cushion, seat covers or pads, sun awnings, ventilators, windshield wings, goggles, shock absorbers, sun visor, window curtains.

Under the heading, "For Your Convenience," is this list: Ash receiver, clock, dome lamp, gear shift extension, speedometer, trunk, vanity case, cigar lighter, compass, dash gasoline gage, luggage carrier, tire pressure gage, vacuum cleaner and whisk broom.

Shows Emergency Items

The longest list is that under the heading. "For Emergencies," containing the following items: Blow-out boots, collapsible bucket, coveralls, file, fuses, grease gun, hammer, lamp bulb kit, pliers, rim wrench or tool, rim lugs and bolts, spark plug wrench, tow line, tire and tube repair kit, polish and rags, spare coil, timer, spare battery cable, adjustable end wrench, wrench kit, reserve gas and oil cans, chain repair links, cold chisel, cotter-pin kit, fan belt, flashlight, jack, pump, nut and bolt assortment, oil can, penetrating oil, radiator compound, screw driver, set of spark plugs, trouble light, top repair kit, radiator hose, two spare tires and covers, first aid kit, valve caps and cores, wire and tape.

Each jobber member of the A. E. A. will be provided at once with 50 of these posters for distribution to dealers and additional copies may be obtained from the association. Manufacturers also will be provided with sample and they may order them in quantities desired.

A four-page folder for distribution to dealers also has been prepared, giving pointers on how the dealer may utilize this campaign to increase his sales through the vacation season.

This poster campaign is the first definite contribution of the Greater Market Development Bureau to the merchandising activities of the A. E. A.

"Make it Easy to Buy" A.E.A. Marketing Slogan

CHICAGO, June 4—"Make It Easy to Buy," is the new slogan of the Greater Market Development Bureau of the Automotive Equipment Association. These five words, according to Harry G. Moock, managing director, constitute the yardstick by which the activities of the department will be measured. Every activity of the market development bureau must be such that it makes it easier for the customer to buy automotive merchandise and therefore makes it easier for the dealer to show a profit.

Johns-Manville Profits Total $4,272,227 in 1926

NEW YORK, June 6—Consolidated net earnings of Johns-Manville, Inc., in 1926 were $4,272,227 before Federal taxes, according to a statement issued following the sale of stock to J. P. Morgan & Co. This is the first statement that the company has issued. The balance sheet shows current assets of $15,708,589 and current liabilities, $3,271,400. Total assets amount to $35,270,616. The property account is carried at $16,680,530.

Jordan Shipments Reach New High Point for May

CLEVELAND, June 6—The Jordan Motor Car Co. has just set a new May record for the 11 years the company has been in business. Shipments were nearly double those of May, 1926, and three times those of May, 1925. Only three months in the last 11 years have exceeded May, this year, and only by the narrowest margin, according to Edward S. Jordan, president, who declares the public is showing keen interest in the new Little Custom Jordan models. He also stated that the sale of eight-cylinder models at the new low prices is gratifying.

Olds Opens New Branch

NEW YORK, June 6—Olds Motor Works has opened a new retail store and showroom in the recently completed General Motors Building in New York with Earl L. Coons as metropolitan district manager. Mr. Coons will have charge of the new store and of the Oldsmobile retail sales activities throughout the metropolitan area.

A.A.A. Scents Fight for Excise Repeal

Cites Statements of Administration Spokesmen to Show Need for Action

WASHINGTON, June 7—Demands of American motorists for repeal of the automotive war excise taxes will be carried to the floor of the Senate and House and to the constituencies of senators and representatives by the American Automobile Association, through its 880 affiliated motor clubs, it was announced by Thomas P. Henry, president.

Mr. Henry called attention to statements of several administration spokesmen in the Senate and House that they did not see any great necessity for repealing the remaining portions of the excise tax, although a $300,000,000 cut in the Federal tax bill will be asked of Congress next winter.

"Motorists might just as well understand now that they will secure no tax relief from this administration without fighting hard for it," Mr. Henry said.

Tyree to Consolidate at Bloomington Plant

BLOOMINGTON, ILL., June 4—D. W. Lake, recently manager of the Chicago branch of the Tyree Auto Radiator Co., has been transferred to the main factory here as manager, the Chicago branch being closed and consolidated with the Bloomington operations. Company officials believe this move will mark a turn in the affairs of the company through reduction of the factory's overhead and concentration of supervisory forces. W. W. Witmer has been acting manager of the local plant since the resignation of Mr. Tyree, head of the firm, some months ago. Machinery and stock will be transferred here immediately from the Chicago plant.

Spanish Plant Under Way

WASHINGTON, June 4—A new Spanish automobile manufacturing company has been organized under royal decree and has started production of a new popular priced car which will be free from all kinds of taxes, the U. S. Department of Commerce has been informed. The company has a factory in Madrid and is breaking ground for another plant on the outskirts of the city. The company is building both open and closed models.

Auburn Has 112 Day

AUBURN, IND., June 4—Production of 112 cars on May 25 marked the high day in Auburn operations. The average daily production for several months has been about 100 cars, but the introduction of more efficient factory methods is permitting this to be stepped up as demand increases.

High Output Rates Feature May Totals

Oakland Shows 20% Gain—Hudson Increases 50% Over May, 1926

PHILADELPHIA, June 6—Production records were established by many companies in May according to figures now available for publication.

Oakland Motor Car Co. with an output of 24,006 ran 20 per cent of the previous high total set up in April. During the month a production schedule of more than 1000 cars daily was maintained, a goal which the company has been aiming for since the first of the year.

Willys-Overland Co. production in May totaled 27,569, the highest mark that company has ever reached in May and a 64.8 per cent increase over May, 1926. For the first five months of the year Willys-Overland production totaled 108,788, a high all-time mark for this period and an increase of 28 per cent over the 1926 period.

Output of the Studebaker Corp. of America in May was between 13,000 and 14,000 cars, A. R. Erskine, president, reports. Studebaker sales in the quarter will approximate 36,000 cars, he said, as against 20,000 in the second quarter last year. Operations are not at capacity but are holding up well, Mr. Erskine said.

Hudson Motor Car Co. reports a May output of 34,500 cars, more than 50 per cent in excess of May, 1926, figure of 22,000.

Paige-Detroit Motor Car Co. reports May shipments of 1507 as against 2819 in April. Shipments in May last year were 3201 Paige cars and 1708 Jewett. The June schedule is for 3000 cars.

Pierce-Arrow Motor Car Co. reports May shipments 12 per cent larger than for April and 15 per cent larger than in May last year. Indications are that the heavy rate of shipments will continue through June according to Myron E. Forbes, president.

Peerless Motor Car Corp. reports sales of 1700 cars in May, a new high record. Output rate is continuing in excess of 100 cars daily with sales far in advance of production, according to Edward VerLinden, president.

New York "U" Receives Guggenheim Air School

NEW YORK, June 6—Formal opening of the Daniel Guggenheim School of Aeronautics by New York University took place yesterday afternoon when Daniel Guggenheim, the founder, presented it to Chancellor Elmer Ellsworth Brown, who accepted it on behalf of the university. Mr. Guggenheim predicted that air travel soon would be preferred over both land and sea travel.

A feature of the building is the wind tunnel, 110 ft. long and 55 ft. wide, in which air is driven at a velocity of 100 miles an hour by an 8-blade aluminum propeller, 14 ft. in diameter and propelled by a 500 hp. engine.

The trustees of the Guggenheim fund have made grants to the Massachusetts Institute of Technology, University of Michigan, Leland Stanford, Jr., University and California Institute of Technology to assist in creating aeronautical instruction centers.

Stearns Increases All Model Prices

CLEVELAND, June 9—Increases ranging from $100 to $300 have been made by the B. F. Stearns Co. on the Stearns-Knight G8-85 and F6-85 models, as follows:

F6-85	New	Old
Cabriolet (4-p.)	$3,550	$3,450
Coupe (4-p.)	3,450	3,350
Std. Sedan (5-p.)	3,450	3,350
Std. Sedan Lim. (5-p.)	3,700	3,550
Sedan (7-p.)	3,750	3,550
Sedan Lim. (7-p.)	3,950	3,750
G8-85		
Roadster (4-p.)	3,950	3,850
Touring (4-p.)	3,950	3,850
Cabriolet (4-p.)	4,550	4,250
Coupe (4-p.)	4,550	4,250
Sedan (5-p.)	4,650	4,350
Sedan Lim. (5-p.)	4,850	4,550
Sedan (7-p.)	4,750	4,450
Sedan Lim. (7-p.)	4,950	4,650

New body models added to the F6-85 are five-passenger custom sedan at $3,350 and five-passenger custom sedan limousine at $3,700.

McFarlan Prices Higher

CONNERSVILLE, IND., June 9—The following price increases have been made by the McFarlan Motor Corp. in its straight-eight line:

Model	New	Old
Touring (5-p.)	$3,180	$2,650
Sedan (7-p.)	3,680	3,280
Sub. Sedan (7-p.)	3,780	3,480

Milwaukee Dealers to Junk Used Cars

MILWAUKEE, June 6—With the formation of the Auto Trade Salvage Corp. here, the Milwaukee Automotive Dealers Association will launch an active campaign to bring about the scrapping of many old cars now being used mainly to defraud dealers in making new car sales. Through the salvage corporation, the association will set up a modern scrapping establishment whose aim will be to junk these cars completely at the best possible prices.

Every dealer in Milwaukee whether member of the association or not is expected to be a stockholder in the salvage company. Through operating on a large scale basis it is expected to realize top prices on all materials and metals salvaged from the junked cars thus giving dealers a direct benefit in somewhat increased allowances on their junked cars besides the large indirect benefit of removing these cars from possibilities of further trading.

135-Inch Models Added by Willys

Falcon Announces Prices on Three Models—Diana Adds Cabriolet at $2,295

PHILADELPHIA, June 6—Three new seven-passenger models have been added to the Willys-Knight "Great Six" line by Willys-Overland, Inc. The new models are mounted on a special 135 in. wheelbase chassis and are priced as follows: Limousine, $2,950; sedan, $2,850, and touring car, $2,495.

The open model is intended primarily for the overseas market. The auxiliary folding seats are arranged closer together with wider seats and backs, giving a seating capacity for eight persons with maximum comfort. With the exception of the glass partition, the closed models follow the general design of the closed models on the 126 in. chassis.

Prices on three previously announced Falcon-Knight models have been announced by the Falcon Motors Corp. as follows: Roadster, $1,045; coupe, $995, and landau, $1,145.

A new five-passenger cabriolet roadster with collapsible top has been added on the Diana straight-eight chassis by Moon Motor Car Co. The new model is priced at $2,295.

LaSalle Adds Phaeton with Cowl on Tonneau

DETROIT, June 6—Cadillac Motor Car Co. has announced the addition of a four-passenger sport phaeton to the LaSalle line of body types. The new model retains all the characteristic LaSalle lines but in addition has a number of individual features. A special cowl extends over the tonneau, while a single piece folding windshield is also attached to this cowl, capable of being folded forward in a horizontal position. A large spotlight is also mounted on a nickeled pedestal on the right running board, and the fenders have sunken wells for mounting of spare wheels.

Hood and fenders are finished in black, body in gray, and wheels in red, a narrow body panel also being finished in red. Other color combinations are also available. Upholstery is leather, colored to harmonize with each color scheme. The price will be announced later.

A.E.R.A. Pushes Bus Plan

NEW YORK, June 4—The executive committee of the American Electric Railway Association at a meeting here this week approved the proposed changes in the constitution that will admit to membership independent bus operators under certain conditions. The changes will next be submitted to the membership at the Cleveland convention, Oct. 3.

Car Stocks Reduced in Chicago District

Reserve Bank Reports New Cars 21.5% and Used Cars 13.5% Lower Than in 1926

CHICAGO, June 6—New cars sold at retail in the Chicago Federal Reserve District during April show an increase of 12.7 per cent over March but were 24 per cent under April, 1926. In point of value, the sales were 23.4 over March and 16.2 under April last year. New cars on hand were 5.5 per cent under those on hand at the end of March and 21.5 per cent under those of April, 1926.

Used car sales showed an increase of 4.7 per cent over March and were 7.6 per cent more than in April, 1926. Used cars on hand were 10.8 below March and 13.5 below those of April the year before. In point of value used car stocks were 4.5 per cent under those of March and 5.8 per cent below those of the previous April.

Wholesale distribution of cars in April was 5 per cent below March and 6.7 per cent below distribution in April, 1926.

Cleveland Report Shows High Used Car Business

CLEVELAND, June 6—Final figures in the automotive field for May show new car sales under sales for last May, totals being 4549 sales this May against 5338 in 1926. Used cars total 13,047 for this May against 14,427 of May, 1926. Although Ford still holds high place in car sales, being second this month, it is one of the factors pulling down the general total. While Ford is high in sales the total is so far below last May that comparison figures make the industry look falsely below par.

Chevrolet and Whippet Lead in Spokane Sales

SPOKANE, WASH., June 7—As a result of the persistent rumors, confirmed towards the latter part of the month, of a new Ford and the increasingly stiff competition of other low-priced lines, Ford registrations in Spokane county during May fell off by almost 50 per cent as compared with May, 1926.

For more than a year first and second place in monthly registrations have been battled for between Ford and Chevrolet here but Ford's slump gave Willys-Knight-Whippet second place by a safe margin. Chevrolet registrations were 99 as compared with 69 a year ago, Willys-Knight-Whippet 78 as compared with 28, Ford 59 against 104. Other registrations during the month included 48 Hudson-Essex, 46 Star, 32 Oakland-Pontiac, 32 Nash, 31 Chrysler and 30 Buick.

For the five months' period this year total registrations were 2033 compared with 2322 a year ago. For May the total was 552 compared with 486 in the same month of 1926. The spurt during the month just closed is attributed largely to more favorable weather and dealers and distributors in eastern Washington and northern Idaho anticipate greater volume during the summer and early fall months than a year ago, all indications early in June pointing to a continuation of favorable weather conditions and general business conditions, two factors which leave their impress on sales volume strongly at this time of year.

German Makers Seek Reciprocal Tariffs

BERLIN, June 1 (*by mail*)—At a general meeting of its members convened by the German Automobile Makers Association at the International Truck Show, Cologne, a resolution was passed, which is to be circularized to all German authorities and the members of the Reichstag and the various state parliaments. In the resolution the German makers point out they are everywhere abroad faced with high import duties on their products, the average in fact being as high as 44.1 per cent ad valorem, whereas Germany exacts at present only a duty amounting to 25 per cent ad valorem on the average, which figure is based on the terms of the agreement in force between Germany and Belgium and Italy. Furthermore as the progressive reductions still continue every six months till July, 1928, the average import duty levied by Germany from that day onward on imported cars will only be 12 per cent ad valorem.

The German makers feel this is unfair and complain their interests have not been properly considered in the past and that the Government does not appear to realize how important a branch of Germany's total industry the automotive industry is. The makers demand that in future Germany shall make no concession in the matter of the automobile import duties beyond that which the other nations offer her.

Upholds Canvassing Right

WASHINGTON, June 6—In a decision handed down on May 16, the U. S. Supreme Court reaffirmed its previous decision that municipal ordinances requiring house-to-house salesmen of goods moved in interstate commerce to procure licenses or pay fees are in restraint of interstate trade and, therefore, illegal.

Form Seaman Laboratories

MILWAUKEE, June 6—A charter has been granted to the Seaman Motor Laboratories, Inc., Milwaukee, organized by Harry J. Seaman, Royal Lee and G. Ernest Ward to design, manufacture and market engines, motors, etc., and undertake development of ideas and designs.

Financial Notes

Evans Auto Loading Co., Inc., has declared the regular 75 cents dividend and an extra dividend of 25 cents a share on both A and B stock, payable July 1 to stock of record June 20. Earnings for first five months, after depreciation and reserve for taxes, were $285,000, compared with $213,000 for the same period last year.

Goodyear Tire & Rubber Co. reports profit for the first quarter of 1927 as $6,421,335 after depreciation, subsidiary interest, preferred dividends, minority interest, and other charges, but before Federal taxes and interest on parent company indebtedness. Net sales for the period were $57,518,868.

Societe Anonyme Andre Citroen will have the equivalent of almost $8,000,000 of new capital made available through the sale to a syndicate headed by Lazard, Freres & Cie., Paris, of 400,000 shares of its 8 per cent cumulative preferred stock.

McCord Radiator & Mfg. Co. reports for the first quarter of 1927 a net profit of $153,467, after charges but before Federal taxes. Current assets on March 31 were $2,297,265 and current liabilities, $1,031,760.

Chrysler Markets Replacement Heads

DETROIT, June 7—High compression heads for service replacements on its "60," "70" and "80" models have been placed on the market by the Chrysler Corp. While retaining the previous shape of combustion chamber, they provide the engine with a compression ratio of 6 to 1, standard compression ratios on the "60" and "70" being 4.8 and 4.95 to 1. Cost of installation, including valve grinding and new cylinder head gasket is $27.50 for the model "60" and $37.50 on the model "70," the latter including a change of distributors.

Due to the increased compression ratio better performance is obtained, this being represented by an increase in maximum speed of four to five miles per hour, a 30 per cent decrease in accelerating time and a 20 per cent improvement in fuel economy. Due to the high compression, it is necessary to use a high test gas, or gasoline treated with suitable anti-knock compounds, such as Ethyl gasoline, in order to prevent detonation. It is estimated that the higher cost of such gasoline will be offset by the increased fuel economy, the heads thus furnishing increased performance at no additional running cost.

Chandler Shows 68% Gain

CLEVELAND, June 6—Shipments of the Chandler-Cleveland Motors Corp. in May were 68 per cent larger than in the same month of last year and the heaviest of any month this year.

Men of the Industry and What They Are Doing

Chanter Succeeds Wade as Studebaker Purchaser

Arthur J. Chanter, assistant for the past four years to A. R. Erskine, president of the Studebaker Corp. of America, has been appointed purchasing agent of the corporation and will have his headquarters at South Bend. He succeeds Frederick A. Wade, one of the best known purchasing men of the industry, who has resigned.

Mr. Chanter entered Studebaker's employ as a clerk 15 years ago and has held many important positions successively. Prior to becoming Mr. Erskine's assistant, Mr. Chanter was assistant to the vice-president in charge of manufacturing, with headquarters at Detroit.

In resigning from Studebaker, Mr. Wade did not announce his future plans.

Eby Joins G. M. Export

E. E. Eby, assistant to I. J. Reuter, president of Olds Motor Works, has resigned to join the overseas organization of General Motors Export Co. Mr. Eby will be placed in charge of part of the export company's operations in Berlin. Mr. Eby was first connected with Hyatt Roller Bearing Co., working with that organization five years. He obtained his first experience in export work by engaging with Delco-Remy-Hyatt Ltd., which concern was engaged in foreign trade activities for those products. Mr. Eby next joined the Remy Electric Co., serving as purchasing agent and service manager. He came to Olds shortly after Mr. Reuter was named president.

Wood Heads S. A. E. Section

E. C. Wood, who retired June 9 as chairman of the Northern California Section of the Society of Automotive Engineers, has been appointed chairman of the western section research department of the association. This section covers the entire United States, from Canada to Mexico, west of Denver. Mr. Wood also has been elected a vice-president of the Metropolitan Section, with headquarters in New York.

Ross Splitdorf Executive

Donald Ross has been elected vice-president in charge of finances of the Splitdorf-Bethlehem Electrical Co. Mr. Ross is widely known among financial men, serving as one of the assistants to the late H. P. Davidson in the conduct of the American Red Cross during the war.

Mills on European Trip

Stanley W. Mills, engineer of the truck and bus division of Pierce-Arrow Motor Car Co., is sailing for Europe this week where he will visit factories in England and on the Continent to study the latest European practises and designs.

Industry Party Ready for Stockholm Meeting

Representatives of the automotive industry who will be included in the American delegation to the Stockholm meeting of the International Chamber of Commerce will include Roy D. Chapin, chairman of the board of Hudson Motor Car Co.; Windsor White, chairman of the board of the White Motor Co.; John N. Willys, president of Willys-Overland Co., and C. M. Keyes, president of the Curtiss Aeroplane & Motor Co., Inc.

William Butterworth, president of Deere & Co., is chairman of the transportation and communications group of the American section.

Ruddle is Named Counsel

Bart J. Ruddle, one of the first organizers of the National Automobile Dealers Association in 1917 and now executive secretary of the Milwaukee Automotive Dealers Association, has been named executive counsel to the Milwaukee association, and F. A. Cannon has been named to succeed him in the secretary position.

J. E. North on S. E. D. Board

J. E. North, president of the Electrical League of Cleveland, has been elected to the board of directors of the Society for Electrical Development. J. Robert Crouse of the Crouse, Tremaine & Kulas Co., will also serve on the board.

Ford Joins Reiff & Nestor

Howard K. Ford has resigned as vice-president and sales manager of the Millersburg Reamer & Tool Co. to become sales and advertising manager of the Reiff & Nestor Co.

Optometrists Look Into Motor Vision Problem

WASHINGTON, June 1—One evening of the thirteenth annual congress of the American Optometric Association, which meets here June 20-24, will be devoted to problems of motor vision, it was announced by Dr. Paul Kimball, secretary.

Appointment of a motor vision director in every state is one of the objects of the national motor vision commission of the association, according to Dr. Edwin W. Silver, of this city, chairman. This director should have power to impose an eyesight test on automobile drivers where such a test is considered necessary, Dr. Silver said.

Milan V. Ayres is Named Member of N.A.F.C. Staff

Milan V. Ayres, economist and analyst, has been added to the staff of the National Association of Finance Companies of which C. C. Hanch is general manager. Mr. Ayres was on the program of the 1926 convention of the association, having presented a paper on "Instalment Selling and Its Financing," and since that time has done some work for the association in connection with analysis of bills pending before various state legislatures. Early in 1926 he made a survey of instalment selling for the American Bankers Association. During the war Mr. Ayres was in the statistical branch of the general staff of the army with the rank of major.

Faeh Named Vane Aide

A. C. Faeh, who has been manager of the Ohio Council of the National Automobile Dealers' Association for two years, has been appointed assistant to C. A. Vane, general manager of the association, assuming his new duties June 1. He has been succeeded temporarily as Ohio manager by G. H. Ford, a speaker attached to the staff of the national association.

Williams Joins Splitdorf

W. H. Williams has been added to the Splitdorf Electrical Co. field service division. Mr. Williams is at present traveling Pennsylvania and adjacent states. Announcement of the appointment was made by L. E. Farine, manager of the Splitdorf products service.

Canadian Exports Lower

WASHINGTON, June 7—Canadian exports showed a decrease in April, as compared with April, 1926, the U. S. Department of Commerce has announced. Passenger car exports totaled 2930 units in April, as compared with 6512 in March and 2661 in April, 1926. Truck exports totaled 1145, as compared with 2560 in March and 1440 in April, 1926.

Production figures show decided increases. Passenger cars produced in April totaled 20,157, as compared with 18,297 in March and 16,811 in April, 1926. The truck output totaled 1712, as against 1606 in March and 2709 in April, 1926.

Motorize Guard Unit

KANSAS CITY, June 5—The 128th Field Artillery, Missouri National Guards, will be motorized for the summer encampment at Fort Riley, Kan., in July. This is said to be the first field artillery unit to be motorized in the United States. Orders for the motorization of the unit was revealed here through orders to the factory branch of Four-Wheel-Drive Auto Co.

French Charcoal Gas Burning Trucks Now Produced on Commercial Scale

PARIS, May 18 (*by mail*)—A decision having been taken against a truck show in Paris next fall, a special section for commercial automobiles is reserved at the Paris Samples Fair now being held in that city. Forty manufacturers have stands in this section, all of them being French with the exception of Pierce-Arrow, Ford and Fordson.

This show indicates that the charcoal gas burning truck has definitely passed from the experimental to the commercial stage, for vehicles of this type are being offered by Panhard & Levassor, Berliet, and Renault, and practically a dozen other French truck makers fit specialized gas producer plants to their chassis. The area of these plants has been cut down to such an extent that they can be fitted to 1½ ton truck chassis and to small coaches with very little loss of useful carrying space.

Using Faster, Smaller Trucks

Except for special classes of work, the tendency seems to be towards the use of faster, smaller capacity trucks, and as a consequence pneumatic tires are more and more replacing solids. Six-wheelers are not in evidence and the only creeper track machine is the Citroen-Kegresse. While automobile manufacturers have devoted a lot of attention to small stationary Diesel and semi-Diesel engines, there are no applications of these to vehicles.

Renault presents his first six-cylinder automobile coach and fast truck chassis. This has an engine with cylinders of 85 by 140 mm. bore and stroke, in two castings of three. Both an oil radiator and an oil purifier are fitted and electric equipment consists of a combined electric generator and geared type starting motor. A single plate clutch replaces the cone clutch used for several years by Renault, and the transmission is on the front end of the torque tube and final drive is by spiral bevel gears. The chassis has four-wheel brakes operated through a servo mechanism. The front semi-elliptic springs are shackled at the forward end. This chassis has a wheelbase of 160 in. and is equipped with 34 by 7 in. straight side tires front and rear. Speed is stated to be 54 m.p.h.

The Somua, which is the automobile branch of the Schneider Co., exhibits a new coach chassis intended to go into service in Paris. It has a four-cylinder vertical valve motor of 100 by 150 mm. bore and stroke, a four-speed transmission and a double reduction rear axle. Contrary to the usual French practice the brakes are external and are operated through a Westinghouse servo. A low platform line is secured by a drop in the side rails just to the rear of the motor and a kick-up over the axle.

Next Congress to Get Metric System Measure

WASHINGTON, June 4—The adoption by manufacturers of the United States of the metric system as the American standard of weights and measures will be urged on the next Congress, it was announced here this week by Representative Britten of Illinois. He will introduce the measure in the House and Senator Gillett of Massachusetts will introduce it in the Senate.

Britten points out that every important country in the world, except the United States and Great Britain, now employs the metric system and that it would be of inestimable value to exporters.

At a hearing two years ago the National Automobile Chamber of Commerce opposed the adoption of a similar measure on the ground that it would cause confusion and great expense to the automobile and other industries in this country, without an equivalent advantage.

Sweden Plans Internal Tax

WASHINGTON, June 7—The Swedish Rikesdag is expected to approve an internal tax on automobile tires and gasoline, the U. S. Department of Commerce has been informed. A tax of two crowns per kilo on tires and .06 crowns per kilo on gasoline is proposed, both taxes to apply to commercial stocks now within that country.

Italian Car Producers Would Boom Home Market

WASHINGTON, June 6—Exports of Italian automotive products would be stimulated by allowing temporary importation of raw materials and parts, according to a consensus at a recent conference of Italian manufacturers, the U. S. Department of Commerce has been notified.

The opinion also was expressed that in order to maintain exports, the home market must be developed. Steps were taken at the conference to secure a governmental program of highway improvement, reduction of the tax on motor fuel, revision of taxes on automobiles and changes in the laws of the road.

India Cuts Car Duties

WASHINGTON, June 6—India has reduced import duties on automobiles from 30 to 20 per cent, passing this reduction on to purchasers, the U. S. Department of Commerce has been informed. The reduction resulted in an immediate removal of stocks held in customs bond and new shipments are arriving in considerable quantities. General trade prospects are encouraging. American cars of the medium priced classes are becoming increasingly popular.

British Tax Applies on All Tire Parts

WASHINGTON, June 6—Detailed explanation of the tire duties imposed in Great Britain under the new budget was made in a statement by the U. S. Department of Commerce this week.

The duty is chargeable on all motor car, motor bicycle and motor tricycle tires, including pneumatic outer covers, inner tubes and solid tires; on accessories and component parts, including patches, patching materials and repair kits, tools and instruments for applying patches, tire boots, tire pumps, pressing gages, valves and valve caps and items of similar nature.

The rate of duty is 33 1/3 per cent ad valorem. A preferential two-thirds rate is applied to such goods produced in Canada or any other British country. The value of tires imported when attached to complete vehicles, chassis, wheels or rims, if included in the total value, need not be shown separately on the entry.

California Tax Gives Roads $10,000,000 Yearly

SACRAMENTO, CAL., June 4—Insuring the continuous construction, maintenance and improvement of the state highways of California over a period of 12 years, with minimum expenditure of $10,000,000 for each of those years, Governor Young has signed the increased gasoline tax bill, and the new highway fund allocation measure. Introduction of these bills and their passage by the legislature at the recent session were due almost entirely to the efforts of the California State Automobile Association, and its affiliated organization, the Automobile Club of Southern California. Supporting the measures were every automotive merchandising organization in the state.

India Shows Sales Gain

AKRON, June 4—Tire sales of India Tire & Rubber Co. totaled 132,107 in the first four months of 1927 as compared with 50,327 in the same period in 1926. Tube sales were 131,971 against 45,098. The sales volume in the 1927 period totaled $2,227,352 as against $1,340,135 in the same period last year. Net profit for the first four months was $141,240.

F. C. Osborn

DETROIT, May 28—F. C. Osborn, formerly designing and consulting engineer of Ford Motor Co., and holder of more than 50 patents for mechanical improvements, died this week in Harper hospital here.

All-Steel Bodies Adopted by Morris

British Maker Builds 200,000th Car — Cellulose Finishes Gain in Use Abroad

LONDON, May 27 (*by mail*)—The 200,000th car built by Morris Motors was delivered this week, which represents by a large margin the biggest output of any single make of wholly British car. Morris is also getting down to a standardized all-steel body construction, and though at present only sedans of that type are being delivered it is expected that before long the whole range of bodywork will be all-steel. The same applies to cellulose finish, for the use of which, in fact, the new range of bodies has been specially designed.

Incidentally, several British makers are now delivering a large proportion of their models with a two-tone finish in either oil-paint or cellulose. The usual scheme is for the top sections of the hood to be in a bright hue—yellow, red or crimson lake—with a four inch belt of the same color running back along the top of the body sides and around the back, the remainder of the body, and the fenders, wheels, etc. being black, though in the case of the Rover cars, with which the general scheme originated in England, the various standard color combinations are: Red above and cream below; buff and brown; cream and black, and light blue and black.

Five pounds extra over the price of the car with the one-color finish is charged in most cases for two-tone, while the Rover company offers to provide any color combination to special order for £10 extra. This company has recently introduced a new body model consisting of a four-door Weymann sedan for an improved rendering of the 9-20 hp. chassis, with an increased bore for the four-cylinder engine, the dimensions now being 63 x 95 m.m. in place of 60 x 95 m.m.

The new Weymann sedan is offered at £250 with four-wheel brakes and, although it is in full production, the demand has taken the makers by surprise, resulting in new orders being refused for delivery in less than four weeks. This same company recently reduced the prices of its range of the 16-50 hp. four by £100 in each case, making the five-passenger all-weather £425, the Weymann sedan £525, and the standard sedan £625.

Nash Orders Gain 20%

KENOSHA, WIS., June 6—Nash Motors Co. orders on hand June 1 were 20 per cent greater than a year ago, according to E. H. McCarty, general sales manager. The demand is especially heavy for the new Advanced Six coupe and the Special Six cabriolet, Mr. McCarty said.

Germany Brightest for Car Expansion

WASHINGTON, June 4—One of the outstanding developments in the economic rehabilitation of Germany has been an increasing demand for motor vehicles of all classes and today in no other country of the world are conditions more favorable for the rapid expansion of the automotive industry, according to a report compiled for the automotive division of the U. S. Department of Commerce.

Germany today ranks sixth in the number of automobiles registered and has one motor vehicle for 196 persons, as compared with one to every five in the United States; one to 53 in France and one to 55 in Great Britain.

Peru to Base Tariffs on Insured Valuations

WASHINGTON, June 4—Shippers of automotive imports to Peruvian ports will be required to present for visa to the Peruvian consul, when applying for a consular invoice, a duplicate of the insurance policy covering the goods or a certificate from the insurance company showing the value of the goods in the case of a blanket or revolving fund policy, the U. S. Department of Commerce has been notified.

By the provisions of a decree just issued at Lima, when the amount declared in the invoice is more than 10 per cent less than the amount insured, the latter will serve as the basis for assessment of duty.

Exporters to Peru are advised to be sure when the decree goes into effect July 1 to have insurance policies show both the net value and the gross value, with the insurance covering transportation and similar expenses stated separately from the insured value of the goods themselves.

Turkey Aims at Service

WASHINGTON, June 7—The Turkish government has issued a decree prohibiting importation of automobiles unless spare parts for that make are available at supply shops in the country, according to advices to the U. S. Department of Commerce. It is not believed that any American cars now being sold in Turkey are affected by the decree.

Try Out New Transmission

KELLOGG, IDAHO, June 1—A new hydraulic transmission for automobiles, which has been built here in the shops of the Bunker Hill & Sullivan Mining & Smelting Co., will be given a trial July 1.

Tire Exports Make New High in April

Former Record in April, 1920, is Exceeded by More Than $300,000

WASHINGTON, June 6—New high records for exports of tires and tubes were established during April, the rubber division of the U. S. Department of Commerce announced this week. The April exports of automotive rubber goods established three all-time records.

The shipments of casings and inner tubes showed the highest value ever recorded and exports of tire repair materials also reached a new record. The total value for April was $4,312,527, a new record, surpassing the former high month, April, 1920, by more than $300,000.

Exports of automobile casings have been increasing steadily since Jan. 1, each month in turn establishing a new volume record, which reached 271,000 units in April.

Kansas Moves to Connect Roads Throughout State

TOPEKA, KAN., June 4—Kansas, after dragging behind for many years in its road building program, has made its first actual move to create a connected system of highways in the state.

The newly created highway commission, after meeting with delegations from all parts of the state and much study of the roads that have been built in parts of the state, appropriated approximately $500,000 to assist counties in closing up the gaps.

It is expected that the first allocations of state and Federal aid money under the new state law by the commission will result in an improved highway across the state from the Missouri line at Kansas City to connect with an improved road at the Nebraska line, leading to Omaha and that the road will be connected up during this year.

Jefferson Davis Highway Traverses Historic Trail

WASHINGTON, June 4—The final link of the Jefferson Davis Highway connecting the National Capital and Richmond, Va., was formally opened this week, with elaborate ceremonies at points near both ends of the road.

"This road is of importance to the country as a whole," declared Governor Byrd, of Virginia, in opening the stretch, "for it is both another bond of union between the North and South and a broad avenue through miles of the history that every good American must know."

The road, extending on an almost direct line for 240 miles, is one of the longest continuous stretches of concrete road in the country and cost $3,600,000.

Industry Holds Off 3rd Quarter Buying

All Sheet Mills Now Quoting Recently Advanced Prices —Tonnages Higher

NEW YORK, June 9—While representative demand is largely in abeyance and automotive consumers generally appear to be in no hurry to cover their third quarter steel requirements, sheet rollers claim to have fully established the market at the recent price advances because all mills uniformly quote the new asking prices. Certain it is that never before has there been so determined an attempt made to make higher prices effective in a market in which all indications point to a slowing down in the demand.

Sheet mill operatives will receive the same wage scale as heretofore during the new contract year which begins July 1.

Body builders still have due them on old contracts a considerable tonnage of full-finished automobile sheets; only a relatively light amount of odds and ends business has been placed so far at the new 4.25 cent level.

Strip-steel producers have notified their customers that specifications covering balances due on old contracts and shipping instructions for dates before July 1 must be received on or before June 15, else the contracts will be considered as having lapsed. This applies to both hot and cold-rolled strip steel and contract-holders are making haste to send in their specifications. At the higher prices which apply to fresh strip steel contracts, very little business has been placed so far. Numerically, automotive orders for cold-finished steel bars are very satisfactory, but tonnages involved in individual commitments run rather light.

Pig Iron Sells at $19

Pig Iron—What little foundry iron Michigan automotive foundries are taking on just now is being sold at $19, furnace. The market generally is irregular. At some distributing points, melters are showing considerably more interest in third quarter shipments than at others.

Aluminum—Automotive demand is of a routine character. Weakness in secondary aluminum has had no effect on the market for virgin metal. Imports are slightly on the uptrend.

Copper—While the copper market shows a somewhat improved tone, domestic consuming demand continues light. Recent reductions in prices of copper and brass products brought out quite a little business, and it is thought that before very long Waterbury mills will enter the market for their late third quarter metal requirements.

Lead—The market's trend is toward higher price levels and consumers begin to show more interest.

Zinc—Cyclones in Oklahoma and Arkansas have done considerable damage to several zinc plants. The curtailment in production that results is a strengthening market factor.

German Helicopter Successful in Test

NEW YORK, June 6—Word has been received here of the completion of a helicopter by Engelbert Zaschka, a German engineer, now experimenting at the Johannisthal flying field near Berlin. With it, it is declared possible to rise vertically to any desired height and to stop in the air for exchange of passengers, mail or freight with similar craft or at aerial stations. A trial is declared by the inventor to have been successful, though the machine rose only a few meters.

The helicopter is said to resemble a monoplane but the carrying wings revolve around the body. Simultaneously, a gyroscope is kept in motion by engines, which increases the stability and serves to aid in landing. For the first test an engine of of eight horsepower was successful.

Congress Appropriates $82,500,000 for Aviation

WASHINGTON, June 6—Congressional appropriations for aviation during the fiscal year beginning July 1 total approximately $82,500,000, exclusive of about $25,000,0000 more authorized to be contracted for, according to a compilation just completed by the House committee on appropriations.

Definite appropriations for aircraft activities amount to $50,169,094, the remainder being found in the proportion of expenditures for aeronautics authorized under general provisions for pay of the army and navy, subsistence, transportation, etc.

Of the total, $20,602,594 is for the Army Air Corps, $20,100,000 for the Naval Bureau of Aeronautics, $3,791,000 for development of commercial aviation, $2,150,000 for airmail service between New York and San Francisco, and $2,000,000 for other airmail service under contract.

Describes German Plane

WASHINGTON, June 9—Full description of the record breaking German Klemm-Daimler light airplane which reached a height of more than 20,000 ft. with a 20 hp. engine is contained in an announcement issued by the U. S. Department of Commerce.

K. C. Insurance Advanced

KANSAS CITY, June 5—Theft insurance rates on motor cars in Kansas City were advanced June 3 by the companies doing business in this city. Underwriters declare the new rates are high but also assert that carelessness on the part of motor car owners in Kansas City has increased and made the advance in rates necessary.

Hardwood Buyers Delay Commitments

Higher Prices Check Advance Orders Though Current Shipments Continue High

ATLANTA, June 9—Interviews last Saturday with several of the larger lumber wholesalers in Atlanta and one of the largest ash manufacturing firms in this district indicate that there has been a decided falling off in advance orders for hardwoods from the automotive trades in the last 10 days due to a sharp advance in prices, though the industry is booking a large quantity of orders for its current needs.

The week witnessed an increase in white ash prices that sent them to the highest levels they have attained in more than a year, and the tendency is still reported to be upward through the whole list. The reason for these increases is the lack of production in the flooded districts of the lower Mississippi Valley, an important hardwood producing section. At the same time this lack of production is causing a shortage of ash and hard maple stock, and this is causing the automotive buyers to continue active in the market though they have discontinued placing orders for any length of time in advance.

The biggest demand is for the best grade, or F.A.S. white ash, in 10, 12 and 16 x 4-in. dimensions, with prices on Saturday, June 4, approximately $5 to $10 higher than the week before, while the second best grade, known as No. 1 and select ash, advanced $5 to $15 during the same period for the 10, 12 and 16 x 4-in. sizes. F.A.S maple is also fairly active, with prices up $3 to $5 the past week.

$100,000 Only Bid Made for Auto Body Property

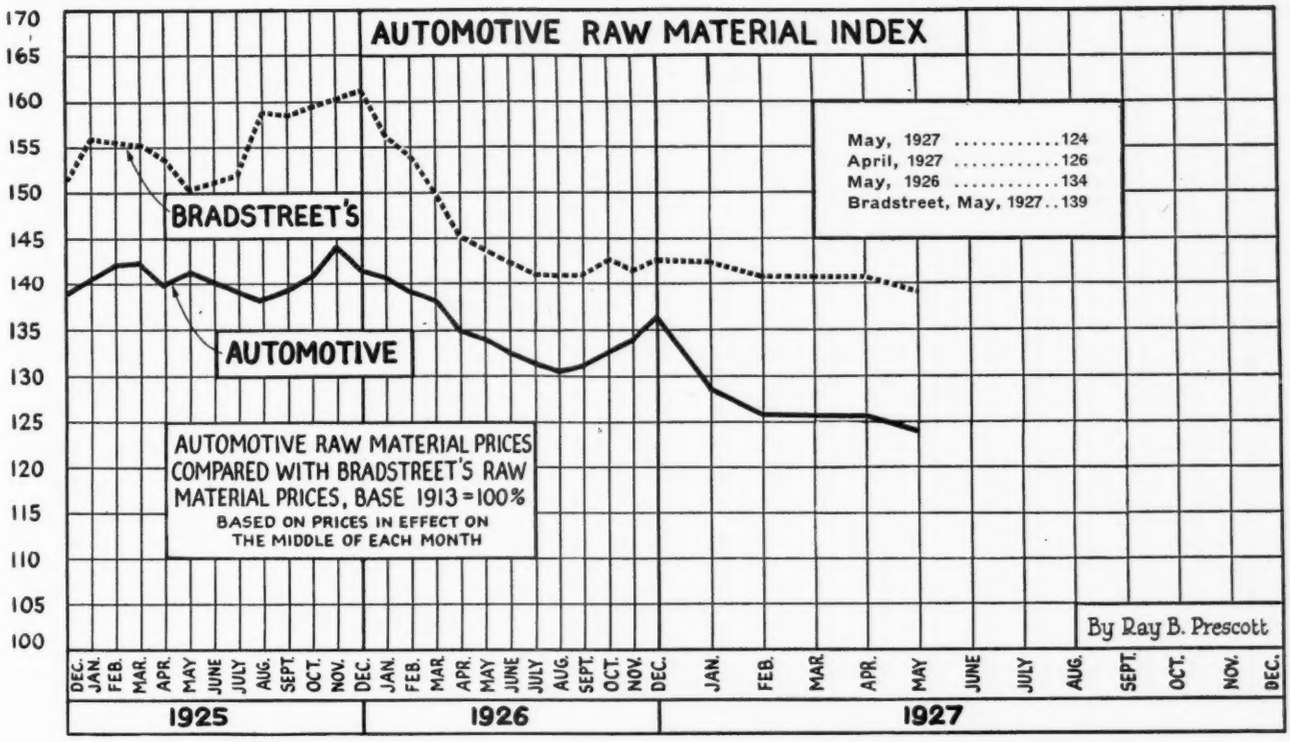
DETROIT, June 6—Only one bid for the plant of the defunct Auto Body Co., of Lansing, was received by the Central Trust Co., receivers. The bid was for $100,000 and was offered by a group of Lansing and Detroit banks, representing the secured creditors of the firm, for the property, against which there is a $377,000 mortgage. The plant has been appraised at $1,267,000.

Previous to the sale several other companies interested in body building had been in Lansing to investigate the plant and it was expected that some of these interest would submit bids. It is not known yet what further steps will be taken by the receiver to dispose of the property.

Chevrolet Exceeds 114,000

DETROIT, June 6—May production of the Chevrolet Motor Co. exceeded the original schedule of 114,000 automobiles, and established a new monthly production record for the company.

Raw Material Prices Decrease in May



Interstate Carriers Subject to States

WASHINGTON, June 6—Interstate motor vehicle traffic on the highways of the nation is subject to control by the various states under a decision of the U. S. Supreme Court rendered this week in sustaining a ruling of the District Court for the Southern District of Ohio, that the state has the right to regulate and tax motor trucks operated exclusively in interstate commerce.

The ruling upholds the Ohio law compelling motor transportation companies operating within the state to apply to the state public utilities commission for a certificate and to pay a state tax. The case grew out of refusal of a motor truck line operating as common carriers between Aurora, Ind. and Cincinnati, to comply with this law.

The question of state right to require liability insurance to be taken out by motor vehicle owners was raised as an incidental part of the proceedings but the United States Supreme Court rule on this point was:

Insurance Not Factor

"We have no occasion to consider whether, under any suggested interpretation, liability insurance, as distinguished from insurance on interstate cargo, may be required of a carrier engaged wholly in interstate commerce."

The court ruled that the argument raised by the truck company that the Ohio tax was not applied to maintenance and repair of the highways had no bearing on the right of the state to tax common carriers.

"Since the tax is assessed for a proper purpose and is not objectionable in amount, the use to which the proceeds are put is not a matter which concerns the plaintiffs," the court ruled.

Calles Bans Government Placing Orders in U. S.

WASHINGTON, June 7—Purchase of goods, including automotive supplies, in the United States by departments of the Mexican government have been prohibited by order of President Calles, the U. S. Department of Commerce has been advised.

The ban was ordered because of increased restrictions placed by the United States on shipments to Mexico. The order does not prohibit American-made goods but orders that no purchases shall be made directly from concerns in the United States.

Gasoline Production Drops

WASHINGTON, June 8—Gasoline production, based on the daily average, showed a decrease in April, as compared with March, which is regarded as unusual, the Bureau of Mines, U. S. Department of Commerce, has announced.

Runs to stills of crude petroleum amounted to 66,964,000 bbl., and the output to 26,577,000 bbl., a daily average of 886,000 bbl. or a decrease of 14,000 bbl. a day as compared with March figures.

California Rates Coaches Utilities

SACRAMENTO, CAL., June 4—Full legal rating of motor coaches as public utilities, both as to regulation and as to taxation, was accomplished at the recently ended session of the California Legislature, as the culmination of five years' effort on the part of the Motor Carriers' Association of the state.

Stability in taxation and regulation was sought by the motor carriers and gained in two separate measures, which are now in force. The first specifically adds three new sections to the political code. It provides (1) that taxes levied on commercial highway carriers shall be devoted exclusively to highway purposes; (2) it designates which companies shall, and which shall not, be taxed in accordance with the provisions of the constitutional amendment; and (3) it provides for the exemption of the stage companies' operative properties from local taxation.

It was provided in the second constitutional amendment that the state tax levied by it should be in lieu of all other taxes, excepting local taxes to cover bonded indebtedness of cities and counties existing prior to October, 1925.

Buick May Sales 30,000

FLINT, June 7—Buick Motor Co. in May delivered at retail approximately 30,000 cars or about the same number as in May, 1926. Production during the month was about 20,000 cars as against 27,000 in April.

12,543 Miles of Road Underway on May 1

WASHINGTON, June 4—Road projects totaling 12,543.3 miles, at an estimated cost of $318,806,492, of which the Federal aid allotment is $134,453,457, were under construction in the United States on May 1, according to a report issued by the U. S. Bureau of Roads.

In addition 2,531.7 miles have been approved for construction at an estimated cost of $64,117,127, of which the share of the Federal government will be $25,443,883. This will leave a balance of Federal aid funds available for new projects of $82,882,714.

Nebraska took the lead in the amount of road under construction in this report, with 1,167.8 miles. Kansas was second, with 649.5 miles and North Dakota third with 642.5 miles.

To Boost Secondary Roads Through County Officials

WASHINGTON, June 7—New county organizations will be formed by the American Road Builders Association at a national meeting of county road officials here June 17 for the purpose of stimulating secondary road building. Charles M. Upham, managing director, stated that the American secondary road system includes more than 2,000,000 miles of highway which is only partially improved.

The necessity for organizing more than 3000 county road officials has long been recognized by the association, Mr. Upham said.

Buckeye Uses N.S.P.A. List

DETROIT, June 4—The first section of the National Standard Parts Association standardized catalog and reference tables is off the press and approximately 25,000 copies have been purchased by the Buckeye Brass & Mfg. Co., Cleveland.

Other members of the N. S. P. A. have plans under way for publishing sections of the standardized catalog, as 18 major lines of replacement parts are to be classified and assigned stock numbers by the catalog committee of the association.

State Road Funds Increase $84,620,216

WASHINGTON, June 7—An analysis of expenditures and revenues of the 48 states made by the U. S. Department of Commerce shows that an average of 15 per cent of expenditures was for highway improvements. Receipts from sales taxes on gasoline amounted to $136,749,865 and from motor vehicle licenses were $233,933,855. This is an increase over the previous year of $49,396,671 in gasoline and $35,223,545 in license taxes.

Form 35th A.S.S.T. Chapter

CLEVELAND, June 6—The thirty fifth chapter of the American Society for Steel Treating has been formed in the Canton-Massilon district with M. H. Schmid, chairman; Earl W. Hanna, vice-chairman; Robert Sergeson, secretary-treasurer, and the following executive committee: E. C. Smith, Floyd Dore, L. D. Gable, T. W. Hardy, C. E. Nordfeld, D. D. Reed, Paul M. Snyder and W. M. Lindsey.

Speeds 113.39 in Hour

PARIS, May 25 (*by mail*)—Driving a 91½ in. Miller Special on Montlhery Track, Douglas Hawkes this week broke the international hour record for cars of this class by covering a distance of 113.39 miles.

$100,000 is Offered for 5 Air Flights

SAN FRANCISCO, June 6—Nearly $100,000 has been offered officially for trans-Pacific, and Atlantic to Pacific flights, with five events involved. The offerings are as follows:

San Francisco to Honolulu—$35,000 offered by James D. Dole of Hawaii, for a non-stop flight; $25,000 to the first, and $10,000 to the second, making the hop.

Dallas, Texas, to Hongkong, 10,000 miles—$25,000 offered by William E. Easterwood, of Dallas.

New York to Spokane—$33,000 offered by Spokane business men for a race to be sponsored by the National Aeronautical Association.

San Francisco to Spokane—$3,500 posted by Spokane interests.

Headquarters of the San Francisco-Honolulu flight group will be opened in San Francisco in June, according to Frank A. Flynn, secretary of the National Aeronautical Association.

If possible it is planned to hold the San Francisco-Honolulu flight in June or July, owing to weather conditions in the south Pacific.

Lincoln Products Gain

CHICAGO, June 4—Sales of Lincoln Products Co. for the first four months of the year show the largest gain the company has ever enjoyed according to E. C. Guthard, president. Export business in the first four and a half months was larger than for all of 1926.

AC Starts New Unit

DETROIT, June 4—The AC Spark Plug Co. will start work immediately on a new addition to its Industrial Ave. plant in Flint. The new unit will provide employment for about 1000 more men.

Calendar of Coming Events

SHOWS

Budapest .....June 4-15
Chicago .....Nov. 7-12
Exposition, Coliseum, Automotive Equipment Association.
Chicago .....Jan. 28-Feb. 4
National, Coliseum, National Automobile Chamber of Commerce, including special Shop Equipment Exhibit.
Chicago .....Jan. 28-Feb. 4
Automobile Salon, Hotel Drake.
Cleveland .....Sept. 19-23
Exposition, Public Auditorium, National Machine Tool Builders' Ass'n.
Cleveland .....Oct. 3-7
Exhibition, Public Auditorium, American Electric Railway Ass'n.
Cleveland .....Nov. 14-19
Convention Hall, National Standard Parts Association.
Cleveland .....Jan. 9-14
American Road Builders Association.
London .....Oct. 14-22
Olympia Passenger Car Show.
London .....Nov. 17-26
Olympia Truck Show.
Los Angeles .....Feb. 11-18
Automobile Salon, Hotel Biltmore.
New Haven, Conn. .....Sept. 6-9
Machine Tool Exhibition.
New York .....Nov. 27-Dec. 3
Automobile Salon, Hotel Commodore.
New York .....Jan. 7-14
National, Grand Central Palace, National Automobile Chamber of Commerce, including special Shop Equipment Exhibit.
Paris .....Oct. 6-16
Grand Palais.
Prague .....June 4-16
International Aeronautical Exhibition.
San Francisco .....Feb. 25-March 3
Automobile Salon, Hotel St. Francis.

CONVENTIONS

American Automobile Association, Bus Division Meeting, Ritz-Carlton, Philadelphia .....June 15-16
American Automobile Association, Annual Meeting, Ritz-Carlton Hotel, Philadelphia .....June 16-17
American Electric Railway Association, Public Auditorium, Cleveland..Oct. 3-7
American Society for Steel Treating, Convention Hall, Detroit....Sept. 19-24
American Society for Testing Materials, French Lick Springs, Ind....June 20-24
Automotive Equipment Association Summer Convention, Multnomah Hotel, Portland, Ore...June 27-July 2
Automotive Equipment Association, Coliseum, Chicago .....Nov. 7-12
Bureau Permanent, Paris .....June 18
International Chamber of Commerce, Stockholm .....June 27-July 2
National Association of Automobile Show and Association Managers, Drake Hotel, Chicago .....July 28-29
National Automobile Chamber of Commerce, Factory Service Managers' Forum, Hotel Statler, Cleveland .....June 14-15
National Safety Council, Stevens Hotel, Chicago .....Sept. 26-30
National Standard Parts Association, Hotel Hollenden, Cleveland..Nov. 14-19

S. A. E.

National

Chicago, November—National Transportation and Service Meeting.
Chicago, Dec. 1—Tractor Meeting.
Cleveland and Detroit, Sept. 19-22—Production Meeting.

RACES

Abilene, Texas .....July 4
Altoona, Pa. .....Sept. 5
Atlantic City .....Sept. 24
Belgian Grand Prix, Spa-Francorchamps .....July 9-10
British Grand Prix, Brooklands.....Oct. 1
Charlotte, N. C. .....Oct.
Detroit .....Sept. 10
French Grand Prix, Montlhery.....July 3
Los Angeles .....Nov. 27
Salem, N. H. .....June 25
Salem, N. H. .....Oct. 12
Syracuse, N. Y. .....Sept. 3